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Abstract. The wealth of social information presented on Facebook is astounding. While these affordances allow users to keep up-to-date, they also produce a basis for social comparison and envy on an unprecedented scale. Even though envy may endanger users' life satisfaction and lead to platform avoidance, no study exists uncovering this dynamics. To close this gap, we build on responses of 584 Facebook users collected as part of two independent studies. In study 1, we explore the scale, scope, and nature of envy incidents triggered by Facebook. In study 2, the role of envy feelings is examined as a mediator between intensity of passive following on Facebook and users' life satisfaction. Confirming full mediation, we demonstrate that passive following exacerbates envy feelings, which decrease life satisfaction. From a provider's perspective, our findings signal that users frequently perceive Facebook as a stressful environment, which may, in the long-run, endanger platform sustainability.

Keywords: Envy, Facebook, Passive Following, Life Satisfaction, Mediation

1   Introduction

With users sharing a whopping 30 billion pieces of content each month, Facebook (FB) represents the largest database of social information the world has ever witnessed [1]. By sharing their updates, users keep in touch and broaden their horizons [2]. As users learn more about each other, bonding and bridging social capital can be created [3-4]. Despite these benefits, opponents warn against negative repercussions these developments bring along. For example, past research has linked consumption of social information on FB to such undesirable outcomes as jealousy [5], increase in social tension [6], social overload [7], isolation [4] and even depression [8].

While findings on the negative effects of social information consumption are alarming, the underlying logic of this dynamic is little understood. In this regard, first reports underscore the proliferation of upward social comparison among members of Social Networking Sites (SNSs), suggesting that envy could be one of the most common negative consequences of following information of others on these platforms [9-10]. Indeed, defined as "*an unpleasant and often painful blend of feelings [...] caused*

by a comparison with a person or group of persons who possess something we desire"
[11], envy can be triggered in a multitude of ways in the SNS environment. First,
unprecedented scale of information sharing registered on SNSs naturally provides a
ground for envy, which is typically induced when new information is learned about
the other [11]. Second, SNSs offer users easy and transparent means to compare and
"benchmark" themselves against their peers, inducing them to engage in social com-
parison. Moreover, an asynchronous and "controllable" way of communicating on
SNSs creates vast possibilities for impression management, with SNS members often
over-emphasizing their achievements [12].

Triggered by over-exposure to social information on a SNS, envy feelings can
cause significant damage to users' well-being and impact their life satisfaction [11].
Indeed, past research from social psychology reveals that envy may lead to frustration
[13], mental suffering [14] and even depression [15-16]. To limit their contact with
envy-inducing information, users may consciously reduce platform use, as described
for other contexts by past research on organizational psychology [17]. This, however,
is undesirable for SNS providers, who face significant pressures to maintain a stable
user base [18]. Overall, it appears that envy can indeed be the missing link explaining
the negative effect of social information consumption on users' emotional states and
loyalty behavior. However, despite potential seriousness of these effects, no study to
the best of our knowledge directly investigates the phenomenon of envy in the SNS
context.

To fill this gap, we adopt a two-stage approach. In study 1, we explore the scale,
scope, and nature of envy-inducing incidents triggered by FB use. In study 2, the role
of envy feelings is examined as a mediator between FB passive use and users' life
satisfaction - a critical indicator of value engagement with SNSs brings along.

2   Theoretical Background

Indeed, outcomes of SNS use are tightly coupled with passive following of infor-
mation others share on the platform – a behavior also synonymously referred to as
"*content consumption*" [4]; "*social searching*" and "*social browsing*" [19]. Passive
following takes place when users browse their News Feed, click on 'stories', follow
communication of their friends, or proactively examine profiles of others. State-of-
the-art research recognizes the importance of studying consequences of passive con-
sumption of information since it represents the dominant activity on SNSs [19].

Apparently, widespread engagement in this activity signals a positive affect users
experience in the process of social browsing [19]. Following details of others' lives
may also have positive cognitive effects since it helps to reduce uncertainty, thereby
providing basis for social trust, civic engagement and political participation [20].
Koroleva et al. [2] show that by passively following others on FB, users broaden their
horizons and build a sense of connectedness. This helps them realize an array of tan-
gible networking benefits. On the other hand, a growing body of research warns
against this one-sided positive view. Indeed, most recent evidence suggests that con-
tinuous engagement in passive following may lead to feelings of exhaustion, annoy-

ance, irritability and overload [7], [21]. In a seminal study, Burke et al. [4] uncover a significant link between social content consumption and perceptions of loneliness. Altogether, these findings are alarming, since they signal a potential of SNSs to intervene with users' well-being and life satisfaction and, over long-term, impact platform sustainability. Nonetheless, little research exists uncovering the roots of the observed dynamics.

The findings of Jordan et al. [22] suggest that upward social comparison and envy can be rampant in a peer-dominated SNS environment, which can provide explanation to negative outcomes passive following was shown to produce. Specifically, in a non-SNS related study, the authors show that people tend to underestimate negative experiences of others and overestimate their positive experiences, which causes negative emotions to proliferate. SNS environment is particularly likely to exacerbate envy feelings, since it promotes narcissistic behavior, with most users sharing only positive things about themselves [12]. For example, Chou and Edge [9] find that respondents actively using FB were more likely to agree that "*others had better lives than themselves*". Moreover, friend lists typically consist of individuals with a high degree of similarity to the profile owner [23], which is particularly conducive for the proliferation of envy feelings [11].

However, despite the obvious potential of SNSs to promote envy and social comparison, no study to the best of our knowledge has investigated the scale and consequences of this phenomenon in the SNS context. Recognizing this lack of studies, we draw on research from social psychology and organizational science to discuss potential effects of this emotional state. In this research, envy is typically described as a painful emotion that emerge as a result of upward comparison to advantaged others, who possess something, that one covets but lacks [11]. Envy is an unalienable part of social interaction, with people experiencing this feeling in private and workplace settings, or any other environment, where inter-personal interactions take place [24]. On the positive side, benign envy was shown to lead to learning, motivation, better performance, and achievement [25]. On the negative side, malicious envy leads to desire to harm the envied object and breeds hostility [24]. Endured over longer time periods, envy can damage one's sense of self-worth, result in group dissatisfaction and withdrawal, lead to depressive tendencies, reduce perceptions of well-being, and poor mental health [11]. Considering these detrimental effects of envy, in this study, we explore the dynamics of envy processes in the SNS context. Specifically, in the next step, we examine the scale, scope, and nature of envy-inducing incidents triggered by FB. Building on our findings, we then explore whether envy feelings can explain a negative impact of passive consumption on individual well-being.

3 Study 1: Exploring the Scale, Scope, and Nature of Envy on SNSs

Considering the lack of studies directly addressing the phenomenon of envy in the SNS context, the scale, scope, and nature of envy phenomenon on SNSs have been studied first in an explorative manner. To do so, a short online survey including a

mixture of open- and close-ended questions has been conducted. Responses to open-ended question have been always content-analyzed in two steps. First, authors have identified relevant categories. Next, two independent coders were trained to code the data. This allowed us to calculate Inter-Coder Reliability (IRR) measured by Cohen's kappa to ensure the quality and validity of the coding procedure. In case of disagreement, a final decision on the attribution of a code was achieved via consensus by authors. We refrain from describing questions in a separate part of this paper due to space limitations, but rather present them in the course of our analysis below.

The survey was advertised using a mailing list of Humboldt-Universität zu Berlin and was positioned as a study of "*emotions of Facebook users*" to avoid priming. A lottery of 15 €5 Amazon.de gift cards was offered as an incentive to take part in the study. 357 respondents answered most parts of the survey (the answers were not forced). 34.2% (65.8%) of respondents were male (female). The median age comprised 24 years. 93.8% stated Germany as the country, where they have spent most time of their life. 89.9% (3.9%) of respondents were students (employed). 25% of respondents studied language / culture studies, 7.6% studied law, with the rest studying a great variety of other disciplines. The median number of FB friends reached 169. 50.0% of respondents stated to spend between 5 and 30 minutes daily on FB.

Question 1: Emotional Outcomes of Facebook Use. To avoid priming, a general open-ended question was asked first: "*Please think about the last time you used Facebook. What did you feel afterwards? Which emotions have you experienced?*" 347 (97.1%) of respondents gave a short answer to this question resulting in a data corpus of 3167 words. Initial analysis and subsequent coding of responses reveal a plethora of emotional outcomes the use of FB can produce (see Table 1).

Table 1. Emotional outcomes of most recent Facebook use.

Emotional Outcomes	Share of respondents	Emotional Outcomes	Share of respondents
Positive (at least one)	*43.8%*	*Negative* (at least one)	*36.9%*
• joyful / fun	28.8%	• bored	13.8%
• satisfied	9.5%	• angry	9.2%
• informed	7.8%	• frustrated	8.9%
• excited	6.1%	• guilty	3.5%
• relaxed	4.3%	• tired	2.9%
Neutral	*28.8%*	• sad	2.6%
Other	*4.3%*	• lonely	1.4%
		• envious	1.2%

Specifically, five positive and eight negative emotional outcomes emerged from the data varying in their degree of intensity. 29.7% of respondents reported two or more emotional states, with the rest reporting only one emotional outcome. IRR was high reaching 0.733 (p = 0.000), which shows that our data is suitable for further analysis. We find that 43.8% of respondents report at least one positive emotional outcome following their Facebook use. At least one negative emotional state is reported by the lower share of respondents (36.9%). Among positive outcomes, "*joy and fun*" feelings were the most prevalent with 28.8% of respondents reporting these experiences. The-

se were followed by feelings of "*satisfaction*", feeling of being "*informed*", "*excitement*" and "*relaxation*". Among negative outcomes, 13.8% of respondents reported feeling "*bored*", 9.2% admitted "*anger*" and 8.9% reported "*frustration*". "*Envy*" – a subcategory in the focus of our study – was only mentioned by 4 respondents in our sample. The seeming unimportance of envy revealed in this analysis may be rooted in respondents' reluctance to directly admit to experiencing envy, rather reporting such general outcomes as feelings of anger, exhaustion, frustration, and irritation [11], [26]. Admitting to these feelings is more socially acceptable, since they can be equally caused by information overload [21] or social conflict [6], which carry less social stigma. Whether this explanation holds, was tested in a follow-up question.

Question 2: Causes of Frustration with Facebook. The second question was not directed at the respondent but rather targeted emotional outcomes of "others". Specifically, respondents were asked: "*Many users report feeling frustrated and exhausted after using Facebook. What do you think causes these feelings?*" Projective techniques are often used in survey design, as they help to elicit honest responses [27]. 307 (86.0%) respondents answered this question resulting in a data corpus of 5831 words. As a result of initial content analysis, 13 sub-categories have been identified, as summarized in Table 2. IRR was high reaching 0.735 (p = 0.000). Most respondents mentioned only one reason for frustration, 17.3% mentioned two, and 2.0% mentioned three reasons. We find that "*envy*" emerges as the category of the highest importance with 29.6% of respondents mentioning it as a major reason behind frustration and exhaustion of "others". Feelings of envy by far surpass such causes, as "*lack of attention*" (19.5%), "*loneliness*" (10.4%), and "*time loss*" (13.7%). This outcome suggests that even though respondents do not admit feeling envy when asked directly (question 1), they readily relate this emotion to frustration resulting from FB use.

Table 2. Reasons for "others" being frustrated after Facebook use.

Reasons	Explanation	Share of Respondents
Social Causes		
• lack of attention	lack of comments, likes, feedback	19.5%
• social problems	conflicts, tension, quarrel	2.0%
• loneliness	social isolation, no face-to-face contact	10.4%
• having missed smth	missing events, concerts, not invited	5.5%
• jealousy	jealous of one's (ex-)partner, friend	2.0%
• envy	envy, social upward comparison	29.6%
Informational Causes		
• content of news	sad news, frustrating news	10.1%
• uselessness of news	information overload, bad content	7.2%
• boring news	boredom, no news, uninteresting news	5.5%
Functionality	long loading times, missing functionality	4.2%
Time Loss	losing time	13.7%
Other Causes	other non-classified causes	1.3%
Unidentified Causes	not being able to identify a cause	5.9%

Moreover, when subsequently asked "*How often do you experience feelings of frustration and exhaustion after using Facebook?*" with pre-specified answers on a 7-point scale: *1 = (almost) never; 4 = sometimes; 7 = (almost) every time*, 36.4% of respondents reported feeling frustrated and exhausted *at least sometimes or more often*. Among those respondents, 29.2% mentioned envy as a major cause of frustration behind FB use, thereby indirectly admitting to envy. This outcome leads us to conclude that even though respondents are unwilling to admit to it, envy is a common consequence of SNS use.

Question 3: Triggers of Envy and Role of Facebook. The scope and nature of the envy phenomenon on SNSs has been further explored by asking respondents about the context of their most recent envy experience: "*Please think about the last time you envied someone. Where did you experience this feeling?*". Pre-specified options included "*personal encounter*", "*Facebook*", "*Xing*" and "*other*". We find that 71.5% (238) of recent envy-inducing incidents are still experienced *offline*. Nonetheless, *Facebook* is responsible for causing 21.3% (71) of most recent envy cases, with the rest being triggered by "*Xing*" or "*Other*" settings. This magnitude of envy incidents taking place on FB alone is astounding, providing evidence that FB offers a breeding ground for invidious feelings. To better understand in which areas incidents of envy are common and whether FB provokes incidents of different nature, the following question was posed: "*What have you envied that time?*". This autobiographical narrative methodology has been successfully used in eliciting envy-related and other secretive experiences [28].

Table 3. Envy-inducing incidents in offline settings and on Facebook.

Envy-inducing incidents	Share of Respondents		Mann-Whitney Test p-value
	Offline	FB	
N sample	*238*	*71*	
Travel and Leisure	19.3%	56.3%	.000
Social Interaction	6.3%	14.1%	.035
Love, Family and Relationship	5.9%	4.2%	.592
Success			
• money / material posessions	8.0%	1.4%	.049
• success in studies	8.4%	2.8%	.109
• abilities	11.8%	2.8%	.026
• success in job	15.5%	2.8%	.005
• success in general	10.5%	5.6%	.218
Appearance	7.1%	2.8%	.184
Personality	6.3%	1.4%	.103
Happiness	6.3%	7.0%	.824
Other	2.9%	5.6%	.283
No Envy	2.5%	1.4%	.581

333 obtained responses resulted in a data corpus of 2834 words. In most cases only *one* subject of envy has been stated, with 9.6% indicating *two* subjects. In total, 13 categories have been identified and subsequently coded, with IRR reaching an appropriate level of 0.706 (p = 0.000). Table 3 summarizes the differences between envy subjects for *offline* and *FB* contexts. We find that envy about "*travel and leisure*", "*social interactions*" and "*happiness*" belong to the three most frequently mentioned causes of envy triggered by *Facebook* use. In daily encounters, however, "*travel and leisure*", "*success in job*" and "*abilities*" of another person represent the three most common categories. Overall, the fact that "*travel and leisure*" account for a whopping 56.3% of all envy incidents triggered by FB is interesting. The reasons for this are likely rooted in a high share of travel photos posted by FB users. Indeed, while sharing content directly depicting expensive material possession might be seen as bragging by others; posting photos from vacations has long established itself as a norm on SNSs [29]. As a result, by sharing this type of content respondents do not risk to be accused of engaging in the outright self-promotion, while still, in a way, doing so.

4 Study 2: The Role of Facebook Envy in Users' Life Satisfaction

In line with study 1, we found that envy feelings are often triggered by following information of others on FB. Experienced over a long time period, these invidious emotions can lead to frustration and exhaustion, damaging individual life satisfaction – a critical indicator of users' well-being. To investigate whether these effects take place, a follow-up study investigating the role of envy feelings in the relationship between passive following and life satisfaction – was undertaken.

4.1 Research Hypotheses

Most studies consistently find a positive link between *active* communication or general FB activity and such desirable outcomes as life satisfaction [30], social capital [20], and emotional support [2]. The evidence, however, is mixed when it comes to the impact of *passive* use of SNSs, suggesting that directionality of FB impact depends on a specific type of user activity. Since passive use is central for the emergence of envy feelings, we concentrate on this type of user behavior in our model.

Using a convenience student sample and self-report measures, Koroleva et al. [2] find a positive link between intensity of information consumption and such favorable outcomes as horizon-broadening and networking value. Nonetheless, a number of recent studies voice an array of concerns regarding negative effects of passive following, including feelings of exhaustion [7], information overload [21], and social tension [6]. Apparently, while passive following satisfies users' needs for novelty and cognitive stimulation, thereby resulting in a positive affect in the short-run [19], [31], in the long-term excessive consumption of social information leads to depletion and exhaustion. Confirming these effects, Burke et al. [4] find a positive link between intensity of passive following and perceptions of loneliness. Based on FB log data as

a measure of user activity, the findings of this study appear to provide the most reliable snap-shot of long-term consequences of FB usage available so far. Therefore, considering that global life satisfaction and loneliness are related components and are both parts of the concept of well-being [32], we cautiously hypothesize that: **Intensity of passive following on FB is negatively associated with Life Satisfaction (H1).**

With an average user having 130 friends in her profile, SNSs offer a fertile ground for episodic envy feelings to proliferate. These feelings can be triggered as users encounter positive information of others and engage in social comparison while browsing the News Feed [9]. Presence of friends with similar background is likely to magnify these effects, since demographic similarity is often used to identify a suitable reference group one attempts to match with [11]. Moreover, proliferation of narcissistic self-presentation, well documented by past research [12], makes activation of invidious emotions hard to avoid. In fact, both men and women find themselves under high pressure to communicate their best sides to their peers, even though in different areas. For example, male users have been shown to post more self-promotional content in "About Me" and "Notes" sections on FB, as they attempt to communicate their accomplishments and establish social standing [12]. Women, on the other hand, stress their physical attractiveness and sociability [33]. Overall, however, shared content does not have to be "explicitly boastful" for envy feelings to emerge. In fact, a lonely user might envy numerous birthday wishes his more sociable peer receives on his FB Wall [4]. Equally, a friend's change in the relationship status from "single" to "in a relationship" might cause emotional havoc for someone undergoing a painful break-up. Against this background, we hypothesize that: **Intensity of passive following on FB is positively associated with Envy on FB (H2).**

Social and organizational psychology research provides a well-documented body of scientific studies on the negative consequences of invidious emotions [11], [24]. In work settings, job-related envy was shown to lead to extreme general, job and group dissatisfaction, and even health problems [34]. Similar effects have been also registered in other settings. For example, Salovey and Rodin [35] show that unfavorable social-comparison on self-relevant dimensions elevates anxiety in college undergraduates. Moreover, experienced over longer time periods, feelings of envy were shown to cause inferiority attitudes, which lead to depression and poor mental health [11]. Equally, we expect Facebook-induced envy to have a negative impact on personal well-being. We, therefore, hypothesize that: **Envy on FB is negatively associated with Life Satisfaction (H3).**

Central for our work, Hypothesis 4 disentangles the relationships described above (H1-H3). Indeed, a number of studies provide evidence for the link between passive following on FB and such outcomes as feelings of exhaustion [7], social tension [6], and loneliness [4]. Considering the central role that *Envy* plays in the interpretation and internalization of information about others [26], [36], it is plausible to hypothesize that these negative outcomes are mainly enacted by the *Envy* processes it triggers. In other words, in the context of our study it is not (only) passive following by itself that reduces individual life satisfaction, but also (and rather) these are envy feelings, passive following is likely to produce, which lead to this negative outcome. We hy-

pothesize that: **Envy mediates a relationship between Intensity of Passive Following on FB and Life Satisfaction (H4).**

4.2 Control Variables

Past research offers significant support that SNS-enabled outcomes are contingent on user demographic characteristics. For example, women were found to emphasize relational uses of SNSs more than men, which make women particularly likely to engage in upward social comparison [37]. Hence, we include *gender* as a control variable. Additionally, age differences may also intervene with SNS-enabled outcomes and envy processes. This is because older people are likely to have more experience in coping with envy-inducing incidents, which helps them minimize the impact of invidious emotions [11]. Hence, we also integrate *age* as another control variable. Further, size, and structure of one's friend list has often been used as a predictor of SNS-enabled outcomes [4]. Therefore, we integrate *number of friends* as the third control variable into our model. Finally, users who actively participate on a SNS by sharing status updates, links, and comments may simultaneously be eager consumers of social information. In this case, both active and passive participation can impact the reported level of life satisfaction. To discern the confounding influence of these variables, *active participation* was additionally controlled for.

4.3 Survey Design and Sampling

To validate our research model a follow-up online survey was conducted by distributing the invitation via a mailing list similar to study 1. Participation in a raffle of 40 €5 Amazon.de gift certificates was offered as an incentive to take part in our survey. While we relied on the pre-tested measures where possible, some scales had to be developed anew or slightly modified to fit to the context of our study. A 9-item ***Envy*** scale reflecting the FB context was self-developed. Examples include: "*When on Facebook, I catch myself envying: (1)...how much of the world others have already seen; (2)...how successful others are; (3)...what abilities others have; (4)...how happy others are*. The 7-point scale used ranged from 1 = "*(almost) never*" to 7 = "*(almost) always*". Four items for the ***Life Satisfaction*** Scale were borrowed from Diener et al. [32] and measured on a 7-point Likert scale. Examples include: (1) *In most ways my life is close to my ideal*; or (2) *I am satisfied with my life*. The measure for ***Passive Following*** included items: "*On Facebook, how often do you? (1)...look through the News Feed; (2) ...look through the conversations your friends are having; (3)...browse the profiles of others*", which were largely based on Koroleva et al. [2].
A 7-point scale was used: *1=never; 7=several times a day*. All constructs were measured as reflective. ***Active Participation*** was measured based on Koroleva et al. (2011). 227 usable observations were obtained. 31.7% (67.8%) of respondents were male (female). The median age comprised 24.3 years. 94.3% stated Germany as their country of residence. 86.3% (4.4%) of respondents were students (employed). 25.1% of respondents studied language / culture studies, 10.1% studied social sciences, and 7.5% business and economics. The median number of FB friends reached 179. 5.7%

of respondents stated to spend less than 5 minutes per day on FB; 45.8% spend between 5 and 30 minutes; 22.0% spend between 31 minutes and 1 hour; and 26.4% spend more than 1 hour on FB.

4.4   Evaluation of the Research Model

Exploratory nature of our study as well as a non-normal distribution of our data dictated the choice of Partial Least Squares (PLS) approach to test our hypotheses using SmartPLS 2.0.M3 [38]. Model A was evaluated to test H1, H2 and H3 (see Figure 1). Following Baron and Kenny [39], model B – only including a direct causal link from *Passive Following* to *Life Satisfaction* – was additionally assessed to test the mediation effect of *FB Envy* (H4) (see Figure 1).
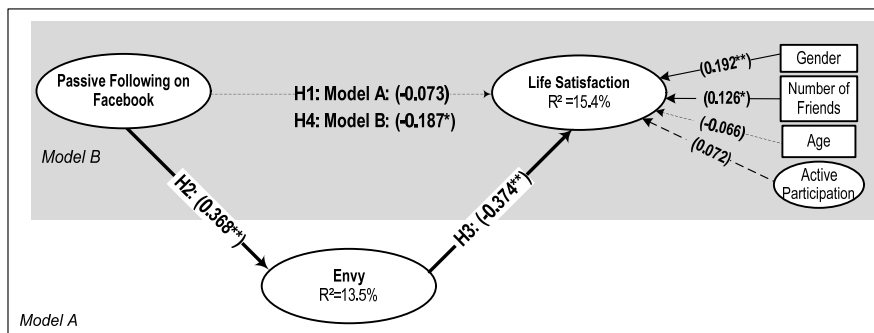
Significance: * at 5%; ** at 1% or lower; R^2 values reported for Model A.

Fig. 1. Results of the Structural Model

Assessment of Models A and B included two steps: First Measurement Model (MM) and then Structural Model (SM) were evaluated. MM was evaluated by verifying the criteria for Convergent Validity (CV) and Discriminant Validity (DV). To ensure CV, parameters for Indicator Reliability (IR), Composite Reliability (CR) and Average Variance Extracted (AVE) were assessed. For IR, constructs should explain at least 50% of the variance of their respective indicators. Items with factor loadings below 0.4 should be removed from the model [40]. The majority of item loadings in both models satisfied the former strict criteria, exceeding the level of 0.7 [41]. Two items in Model A and two items in Model B were only slightly below 0.7. Taken together, IR was assured. Further, CR values for all constructs in both models were higher than the required level of 0.7 [41]. The AVE values for all measured constructs by far surpassed the threshold level of 0.5 [42]. Finally, Cronbach's Alpha (CA), a measure of Internal Consistency of construct scales, reached 0.92 for *Envy*, 0.84 for *Life Satisfaction*, 0.68 for *Passive Following,* and 0.81 for *Active Participation.* Taken together, CV can be assumed. Next, DV was assessed by ensuring that the square root of AVE for each construct was higher than the correlation between this construct and any other construct in the model [41]. This requirement was fulfilled for all constructs in both models. Moreover, the correlation between *Passive Following* and *Active Partic-*

ipation comprised only 0.505, providing evidence that two types of participation are related, yet different constructs. Altogether, MMs for both Model A and B are well-specified (all item and construct-level data is available from authors upon request due to space limitations).

Next, the Structural Model (SM) of Model A was assessed (see Figure 1). With *Envy* included, we find no link between intensity of *Passive Following* on FB and users' *Life Satisfaction* (*H1 rejected*). At the same time, we find a strong positive link between *Passive Following* and *Envy* (*H2 supported*) and a negative link between *Envy* and *Life Satisfaction (H3 supported)*. Interestingly, being a woman and having more FB friends increases one's *Life Satisfaction*. Altogether, our model A explains 15.4% of variance in *Life Satisfaction*. Considering that a multitude of other factors can be responsible for individual perceptions of *Life Satisfaction* – social status, family situation, culture, just to name a few – this degree of explanatory power is astounding. Finally, the presence of the mediation effect was evaluated by assessing *Model B*. According to Baron and Kenny [39], full mediation can be observed when a path significant in a direct model (Model B) becomes insignificant when the mediator variable – *Envy* – is present (Model A), assuming that relationships between independent variable and mediator; and mediator and dependent variable are significant, which was confirmed in Model A. For our case, removal of *Envy* construct revealed a significant negative path between *Passive Following* on FB and *Life Satisfaction*. The Sobel Test statistic used to test the mediation effect in Model A was also significant (p=0.000). Taken together, we conclude that *Envy* fully mediates the relationship between *Passive Following* on FB and *Life Satisfaction (H4 supported)*.

5   Theoretical and Managerial Implications

Our study is the first step in understanding envy dynamics on SNSs in general and FB in particular. We find that envy feelings are common on FB, with 20.3% of all recent envy incidents being triggered by FB use. The subjects of envy are contingent on the content users provide on these platforms with "*travel and leisure*", "*social interactions*" of others, and "*happiness*" landing on the top of the list. This is in some contrast to offline encounters, where "*travel and leisure*", "*success in job*", and "*abilities*" are envied more often.

By confirming the mediating role of envy in the relationship between passive *following* on FB and individual *life satisfaction*, our findings significantly enrich existing literature on the role of SNSs in defining users' well-being. We show that intensity of passive following is likely to reduce users' life satisfaction in the long-run, as it triggers upward social comparison and invidious emotions. We expect these findings to hold across cultures, since envy feelings are a ubiquitous phenomenon, representing an important building block of evolutionary processes [11]. Our findings complement the findings by Burke et al. [4], who were first to link intensity of information consumption on SNSs and loneliness, but left explanation of this phenomenon for future studies. Discovered in our data, a full mediation role of envy provides rationale for the dynamics Burke et al. [4] reveal.

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In addition, our findings suggest that outcomes of SNS participation are a function of user behavior. While directed communication has been shown to lead to positive outcomes [3], effects of passive following are more complex. As a result, we recommend future studies to avoid combining different types of user activity into one "general" variable. Instead different types of user behavior should be integrated as independent constructs.

The fact that envy feelings are rampant in SNS environment and can be intensified by passive following – two important outcomes of our study – should be worrisome for providers. Indeed, Tai et al. [24] argue that whether malicious or benign – envy is an experience characterized by pain. To deal with it, people are likely to seek ways to minimize or avoid these experiences. In the SNS context possible strategies may include (1) avoiding adding friends one feels particularly envious about or (2) unfriending these people. These strategies, however, are unlikely to be popular among users, since they contradict social norms present on SNSs and can lead to social tension [23]. Further, as part of their envy-coping plan, some users may (3) engage in even greater self-promotion and impression management. After all, overstatement of personal accomplishment is a common reaction to envy feelings [44]. This behavior can trigger the phenomenon we denoted as the *self-promotion – envy spiral*, with users reacting with even more self-promotional content to the self-promotion of others. As a result, envy-ridden character of the platform climate can become even more pronounced. Finally, the most straightforward way to cope with envy can be (4) to hide posts from friends one feels particularly envious about or (5) to partly or even fully refrain from passive following on SNS. While hiding posts is likely to go unnoticed to the other person, not following social content can lead user to miss out on some relevant information about events or other occurrences, thereby harming a user. Moreover, these strategies are particularly likely to undermine platform sustainability in the long-run, since passive following represents an integral part of SNS participation. Hence, addressing this threat should be seen as priority by providers.

While providers cannot impact general propensity to envy, which is a deeply-rooted personality characteristic, they can reduce users' exposure to particular content, thereby reducing "*episodic envy*" [25], especially for those who are particularly likely to experience invidious emotions. For example, past research shows that users tend to envy those who are *similar* to them in terms of such characteristics as gender, age, cultural background and social status, since they provide a suitable reference group for self-evaluation [11]. Hence, demographics can be used as criteria for information filtering by providers. Second, a series of experiments conducted by Hill et al. [36] show that people tend to study information of others more attentively when envy is involved. Hence, analysis of log files may provide relevant insights into which friends may be triggering invidious reactions, which again can be used for filtering information presented to a user. Third, Smith and Kim [11] suggest that only domains of comparison a subject considers *relevant* can trigger envy. To identify these domains, past research can be drawn upon. For example, people in mid-thirties are more likely to envy family happiness, while teenagers will be indifferent to this information. Similarly, women are more likely to envy physical attractiveness [36]. Integrating these simple heuristics as part of information filtering mechanism can signifi-

cantly reduce users' exposure to envy-inducing information, leading them to perceive a SNS as a stress-free environment. Finally, users with more favorable self-evaluations have been found to react less negatively when envious, while the opposite was true for people with low self-esteem, low self-efficacy, high neuroticism, and high external locus of control [24]. To elicit these personality characteristics, providers can offer users participation in "Personality Quizzes" highly popular on SNSs. Responses to these tests can then be used to identify a group of users particularly sensitive to envy and use special filtering techniques to limit their exposure to envy-inducing content. Overall, regularly measuring the levels of envy on a SNS, and even including an "envy barometer" as a key performance indicator appears to be a rational choice in the light of destructive effects envy feelings can produce in the long-run.

6 Concluding Remarks and Future Research

This study uncovers a rampant nature of envy on SNSs. According to our findings, passive following triggers invidious emotions, with users mainly envying happiness of others, the way others spend their vacations; and socialize. The spread and ubiquitous presence of envy on SNSs is shown to undermine users' life satisfaction – a major contribution of study. In fact, feelings of envy mediate the relationship between passive consumption of information on SNSs and life satisfaction, which provides rationale for relationships identified but not explained in previous research [4]. Finally, our results offer an explanation to the ever increasing wave of self-presentation and narcissism behavior witnessed on SNSs – a phenomenon we refer to as the *self-promotion - envy spiral*. On the limitations side we note that most respondents in both studies were German students. While envy is a worldwide phenomenon, German users might have a distinct sharing behavior, making specific envy subjects particularly salient. Future studies may reveal these exciting particularities.

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