

Social comparison as a double-edged sword on social media: The role of envy type and online social identity

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ABSTRACT

Several studies have explored the psychological consequences of social comparison in SNS usage. This paper aims to explore the behavioral outcomes of social comparison through the underlying mechanisms of benign and malicious envy on Facebook. The paper also examines the role of online social identity in predicting benign and malicious envy. Based on multi-wave data collected from 469 Facebook users in Pakistan, we found that Facebook user's social comparison provoked benign and malicious envy; benign envy, in turn, triggered self-improvement intention, and malicious envy triggered negative gossiping. Moreover, user's online social identity moderated the social comparison-envy relationship such that the positive relationship of social comparison and benign envy was stronger, and the positive relationship of social comparison and malicious envy was weaker when the user's online social identity was high. The study contributes to social media literature by examining the behavioral outcomes of social comparison on social media and discusses empirical implications for policymakers, advertisers, SNS providers, SNS designers, educators, and users.

1. Introduction

In social contexts, individuals tend to compare themselves with others to know their relative standing (Festinger, 1954). Social networking sites (SNS) make the social comparison process easy and ubiquitous increasing the desire to make self-comparison to others because the information is readily available in the form of SNS posts (Haferkamp and Krämer, 2011; Lim and Yang, 2015; Vogel et al., 2014). There are two kinds of social comparison; upward and downward. Upward social comparison takes place when the SNS user compares him- or herself with a superior individual, and downward social comparison takes place when the SNS user compares him- or herself with an inferior individual (Gerber et al., 2018). Individuals are more likely to engage in upward comparison rather than in downward comparison (i.e., upward drive; Festinger (1954); Gerber et al. (2018)). In SNS environments, individuals are also likely to engage in upward comparison, and it is because of the attributes of SNS communications, as “Facebook users often post about their positive life events, successes, and entertaining status updates and sometimes even present themselves in

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overly flattering ways” (Lin and Utz, 2015, p. 30). Furthermore, most connections are with classmates, friends, and colleagues (Ellison et al., 2007; Hew, 2011), who are at times (or often) trying to portray their best side in order to impress peers (Buffardi and Campbell, 2008; Fan et al., 2019). Narcissistic and self-promoting posts of online connections (hereafter, referred to as SNS friends), in particular, are often intended to demonstrate their superior life standing.

Majority of prior research on social media has found that social comparison on SNS has psychological consequences for SNS users, such as it is positively associated with depression (Brandenberg, Ozimek, Bierhoff, and Janker, 2019; Li, 2019; Lup et al., 2015; Steers et al., 2014), higher negative affect (Vogel et al., 2015), burnout (Lim and Yang, 2015), negatively associated with positive affect (De Vries, Möller, Wieringa et al., 2018), self-esteem (Brandenberg et al., 2019; Ouwerkerk and Johnson, 2016; Stapleton et al., 2017), and mental and subjective well-being (Jang et al., 2016; Park and Baek, 2018; Schmuck et al., 2019). Keeping in view the limited research available on behavioral intentions and outcomes, Krasnova et al. (2015) have called to investigate behavioral consequences of social comparison on SNS users. Investigating SNS users' behavioral intentions and responses are essential because this may turn into social, psychological, and work-related outcomes (Meier and Schäfer, 2018; Zheng and Lee, 2016), and closely related to the long-term success of technologies (Cao and Sun, 2018).

Recent investigations have found that social comparison on SNS may lead to behavioral intentions and consequences such as switch intention (Lim and Yang, 2015) and self-enhancement (Krasnova et al., 2015). Extending this limited but growing body of research on behavioral intentions and consequences of social comparison for SNS users, we tend to investigate negative gossip and self-improvement intention as potential behavioral outcomes of social comparison. SNS platforms provide more virtual interaction, with smartphone users checking Facebook multiple times a day in order to see the updates of their SNS friends could engage themselves more in behavioral response such as negative gossiping (Festl et al., 2017) and self-improvement intention (Cramer et al., 2016) in response to unfavorable social comparison on SNS.

As social comparison on SNS research has established envy as an underlying mechanism (Krasnova et al., 2015; Lim and Yang, 2015). Envy is defined as “an unpleasant and often painful blend of feelings characterized by inferiority, hostility, and resentment caused by comparison with a person or group of persons who possess something we desire” (Smith and Kim, 2007, p. 49). Recent research has demonstrated that there are two types of envy, differentiated by thoughts, feelings, and intended actions. Benign envy is a feeling of inferiority and resentment results in a desire to have the same advantage possessed by the comparison target, whereas malicious envy is a feeling of inferiority and resentment that results in a wish for the comparison target to lose the advantage (Lange and Crusius, 2015; Van de Ven, Zeelenberg, and Pieters, 2009).

Utilizing social comparison theory (Festinger, 1954), we propose that SNS user who perceives that his/her life standing is lower as compared to other SNS friends on seeing their posts and photographs (i.e., upward social comparison), may result in emotional reactions such as benign and malicious envy feelings (Van de Ven, 2016), based on the extent to which the SNS user contrasts or assimilates himself or herself with other SNS friends (i.e., by concentrating either on relational differences or on similarities; Mussweiler et al., 2004). Benign envy may translate into challenge-oriented behavior in the form of self-improvement intention (i.e., by improving their own perceived advantages; Van de Ven, 2016; Van de Ven et al., 2009), and malicious envy may translate into threat-oriented behavior in the form of negative gossiping about SNS friend (i.e., by damaging the perceived advantages of envied user; Tariq et al., 2019; Van de Ven, 2016; Van de Ven et al., 2009; Weng et al., 2020).

We advance our model further and propose a boundary condition that can influence contrastive or assimilative process of social comparison in generating benign and malicious envy feelings. We invoke the work on the role of social identity in an online context that can affect social comparison process in eliciting envy feelings (Brewer and Gardner, 1996; Hogg, 2000; Kim and Glomb, 2014). Specifically, SNS users' online social identity determines whether social comparison translates into benign envy or malicious envy. As in SNS environment, users develop their social identities on SNS through interaction with peers online (Barker, 2009; Davis, 2012). SNS plays a vital role in shaping how individuals experience, express, and develop their social identity (Consalvo and Ess, 2011; Latif et al., 2020; Pegg et al., 2018). Research indicates that SNS use affects how users view themselves and their related peers (Blomfield Neira and Barber, 2014). Consequently, online social identity may strengthen the relationship between social comparison and benign envy and weakens the association of social comparison and malicious envy.

Overall, we expect to contribute to the growing social media literature in three ways. First, this study answers the call by Krasnova et al. (2015) to investigate a theoretical framework that explains how and when SNS users respond to social comparison by engaging in challenge-oriented and threat-oriented tendencies. By integrating social comparison theory with envy literature, this study illuminates the process whereby social comparison on SNS is positively related to envy feelings, eventually leading to self-improvement intention and negative gossiping about SNS friends (see Fig. 1). Second, our exploration enlightens intervening process of social comparison on SNS by investigating underlying mechanisms of benign and malicious envy. Thus, this study elaborates self-improvement intention (a positive behavioral intention) as proximal outcome of benign envy, and negative gossiping about SNS friend (a negative behavior) as proximal consequence of malicious envy. Third, because of the theoretical relevance of online social identity in the social comparison process (Brewer and Gardner, 1996; Hogg, 2000; Kim and Glomb, 2014), this study introduces user's online social identity as a moderating variable between the positive relationship of social comparison and envy. Fourth, a research sample from Pakistan is highly relevant to investigate the study of social comparison on Facebook. Facebook is one of the most widely used social networking platforms in the world, having surpassed the 2.32 billion users (Facebook, 2018). Pakistan ranks fifth in population among countries. At this time, about 72% of Pakistani internet users are Facebook users (Internet, 2019), making it the highest-ranking SNS application in the country. Even so, the consequences of social comparison within the SNS context remains under-explored in Pakistan. Finally, our research findings propose implications for policymakers, advertisers, SNS providers, SNS designers, educators, and users.

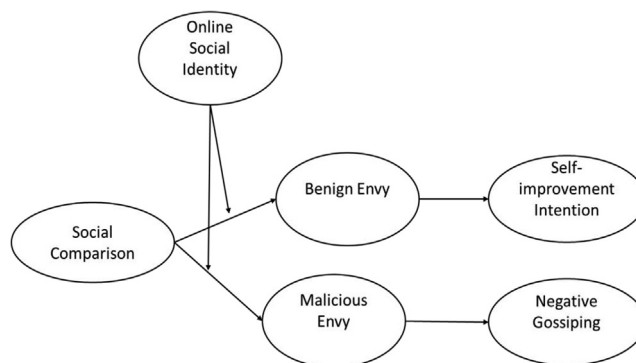


Fig. 1. Theoretical model based on Social Comparison Theory.

2. Theoretical background and Hypothesis development

2.1. Social comparison and envy

Social comparison theory assumes that people tend to compare their opinion and abilities with others (Festinger, 1954). Given a range of possible persons for comparison, someone close to one's own ability or opinion will be chosen for comparison (Festinger, 1954, p. 121). Prior studies found that people are likely to choose a "standard setter" who has superiority in comparison (Feldman and Ruble, 1981; Goethals, 1986; Goethals and Darley, 1977). Similar comparison processes are discussed in the contrast-assimilation social comparison process (Lam et al., 2011; Mussweiler et al., 2004). The reaction to social comparison with the comparison target is influenced by the contrast-assimilation process (Mussweiler et al., 2004). An assimilative social comparison occurs when the individual focus is on relational similarities with the comparison target, and the motivation is to become similar to the comparison target. However, a contrastive social comparison occurs when an individual focuses on relational differences with the comparison target and what up-holds them. When social comparison arises from SNS posts and photographs, the reaction to social comparison with the comparison target is influenced by the contrast-assimilation process (Mussweiler et al., 2004), which translates into benign and malicious envy feelings among SNS users (Van de Ven and Zeelenberg, 2015; Van de Ven et al., 2009).

In the social media context, a recent study by Meier and Schäfer (2018) found that social comparison on Instagram is positively related to benign and malicious envy among German SNS users, which subsequently associated with inspiration among SNS users. Therefore, the social comparison on Facebook may positively associated with emotions of benign and malicious envy among Pakistani SNS users. Therefore, the following hypothesis is proposed:

Hypothesis 1. Social comparison on SNS is positively associated with a) benign envy and b) malicious envy.

2.2. Benign envy and self-improvement intentions

Self-improvement intentions refer to an intention to learn, improve, or be inspired to become someone better (Cramer et al., 2016). Envious SNS users take particular targets as role models and motivate themselves to improve (Lockwood and Kunda, 1997). Similarly, according to Duffy et al. (2008), envy can lead to self-improvement attempts. Benign envy is a positive and motivating emotion that inspires individuals to desire to achieve the heights reached by others (Van de Ven, 2016). Moreover, according to Van de Ven et al. (2009), benign envy results in a motivation to gain the coveted object for oneself as well. Therefore, Turning to the role of benign envy as a driver of self-improvement intention, it is benevolent assimilative emotion that sensitizes an individual for information on how to become similar to a comparison target and thus facilitate the intention of self-improvement (see: Lange and Crusius, 2015; Van de Ven et al., 2009, 2011). Therefore, benign envy feeling of SNS users is likely to be positively associated with the self-improvement intention. Therefore, we predict:

Hypothesis 2. Benign envy on SNS is positively related to self-improvement intention.

2.3. Benign envy as a mediator between social comparison and self-improvement intentions

Based on the argument that there is a positive relationship between social comparison and benign envy (H1a), and SNS user benign envy is positively related to self-improvement intention (H2), we expect that benign envy of an SNS user will mediate the relationship between social comparison and his/her self-improvement intention.

Upward social comparison on SNS may provoke benign, and benign envy is likely to affect the positive behavioral intentions such as self-improvement intentions (Van de Ven, 2016; Van de Ven et al., 2012). Consequently, we argue that individuals who perceive that their SNS friends have superior life standing is positively associated with behavioral intention in the form of self-improvement intention because of his/her benign envy towards envied SNS friends. Meier and Schäfer (2018) found that benign envy mediates the

relationship between social comparison and inspiration on Instagram among German SNS users (Meier and Schäfer, 2018). Similarly, Latif et al. (2020) found that benign envy mediates the relationship between travel-related content exposure posted by friends on Facebook and intention to visit the same destination among Pakistani SNS users. In line with these arguments, we propose the following hypothesis:

Hypothesis 3. Benign envy of SNS users mediates the positive relationship of social comparison and self-improvement intentions on SNS.

2.4. Malicious envy and negative gossiping

Gossiping is defined as evaluative talk about a person behind their back (Foster, 2004). Gossiping can be positive or negative (Foster, 2004). Negative gossiping is a malicious and negative talk about someone in their absence (Turner et al., 2003; Wert and Salovey, 2004). Grosser et al. (2010) state that people use negative gossip to relieve stress. Negative gossiping about SNS friends can be described as negative talk about the posts and status updates of envied SNS friends – such as those on Facebook. The social psychology literature suggests that envy can trigger harmful behaviors, and negative gossiping can be an indirect way of harming the envied target without facing confrontation (Smith and Kim, 2007), for instance, by undermining and belittling (Tai et al., 2012). The social media literature also suggests that envy leads to gossiping behavior (Wenninger et al., 2019). Malicious envy is likely to trigger negative behaviors such as negative gossiping about SNS friends (Lange and Crusius, 2015; Van de Ven et al., 2009, 2011). Turning to the role of malicious envy as a driver of negative gossiping, it is a benevolent contrastive emotion should sensitize an individual for information on how to damage the advantage of comparison target and thus may facilitate the behavior of negative gossiping. Therefore, we hypothesize the following:

Hypothesis 4. Malicious envy on SNS is positively related to negative gossiping behavior about SNS friends.

2.5. Malicious envy as a mediator between social comparison and negative gossiping

Since we expect a positive relationship between social comparison and malicious envy (H1b), and the positive relationship between SNS user's malicious envy and his/her negative gossiping behavior, we expect that malicious envy of an SNS user will mediate the relationship between social comparison and his/her negative gossiping behavior about Facebook friends. Consistent with the comparison process by Tesser (1988), when social comparison arising from SNS posts and photographs, diminishes self-evaluation, the emotion of malicious envy is elicited among SNS users (Smith and Kim, 2007), and may promote the desire for the restoration of decreased self-evaluation by enacting harming behaviors such as negative gossiping toward envied SNS friend (Sung and Park, 2016; Tai et al., 2012; Tesser, 1988). Consequently, we argue that individuals who perceive that their SNS friends have superior life standing are associated with behaviors in the form of negative gossiping about SNS friends because of their malicious envy feelings towards envied SNS friends. Past studies also found that malicious envy elicited in response to upward social comparison reduced the well-being of SNS users (Park and Baek, 2018), and positively associated with quit intentions among SNS users because of malicious envy feelings (Lim and Yang, 2015). In line with these arguments, we propose the following hypothesis:

Hypothesis 5. Malicious envy of SNS users mediates the positive relationship between social comparison and negative gossiping about SNS friends.

2.6. The moderating role of online social identity

Online social identity is defined as “self-concept that results through identification with social groups or categories that individuals experience online” (Pegg et al., 2018, p. 51). Self-concepts “includes both personal and social identities; social identities are aspects of self-concept based not on individual traits and goals but social group-based traits and goals” (Oyserman et al., 2006, p. 189). In this study, we emphasize social contexts over and above the personal traits (see Kozlowski and Klein (2000) by examining the pivotal role of social identity in upward social comparison (Brewer and Gardner, 1996; Hogg, 2000; Kim and Glomb, 2014). We propose online social identity moderates the relationship between social comparison and benign and malicious envy on SNS. Theoretically, the user's online social identity moderates the relationship between social comparison and benign and malicious envy because it changes the unfavorable social comparison process in three ways; (i) the frame of reference, (ii) the origination of self-evaluation from individual superiority to online social group superiority, and (iii) the perceptions toward online friends from “they” to “we (Brewer and Gardner, 1996; Hogg, 2000) thus, identification stimulates an assimilative approach toward social comparisons and reduces the contrastive effect. In such cases, the social comparison on SNS is less threatening. Consequently, online social identity may enhance the benevolent assimilative emotion, i.e., benign envy, and reduce the psychological outcome of benevolent contrastive emotion, i.e., malicious envy towards envied SNS friends such that instead of focusing on what they lack and feel envious, users may develop a sense of communion with other SNS users which boosts their self-evaluation (Kim and Glomb, 2014; Latif et al., 2020). Therefore, online social identity moderates the relationship between social comparison and benign and malicious envy. Hence, we predict that when online social identity is high, the positive relationship of social comparison and benign envy is likely to be stronger, and the positive relationship of social comparison and malicious envy is likely to be weaker. In line with these arguments, we propose the following hypotheses:

Hypothesis 6. The SNS user's online social identity moderates the positive relationship between social comparison and benign envy on SNS, such that this relationship is stronger when online social identity is higher.

Hypothesis 7. The SNS user's online social identity moderates the positive relationship between social comparison and malicious envy emotion on SNS, such that this relationship is weaker when online social identity is higher.

3. Methods

3.1. Sample and procedure

Following previous studies (Lim and Yang, 2015; Meier and Schäfer, 2018; Park and Baek, 2018), this study employed survey procedure to examine social comparison process in SNS context, as it is a quantitative research method that is used to examine the behaviors and the relationship between constructs (Newsted et al., 1998). Therefore, a pencil-and-paper survey was conducted among university students with the assistance of professors in a large university in Pakistan. Participants were students in graduate, postgraduate, and doctoral programs of several departments. Prior research shows that, overall, 93% of young adults aged 18–29 are SNS users (Lenhart et al., 2010). The research found that university students are active social networking sites users (Bolton et al., 2013; Liu et al., 2018). Therefore, university students can be considered as appropriate to conduct this study.

English is the official language of Pakistani educational institutes; therefore, the questionnaire was administered in English. Participants for the study were recruited as follows. The authors approached the participants at the end of their lecture on a specific day. No incentive was given to participants in order to avoid biases (Islam et al., 2020; Latif et al., 2019). The authors explained the purpose of conducting the survey to the participants and also clarified any confusion reported by them. In order to ensure the confidentiality of their information, they were asked to return the questionnaire in a sealed envelope. The students who had never used Facebook were excluded.

We invited 750 students to participate in the survey. Data is collected in two waves, one month apart. In wave 1, we requested the students to provide the rating of their social comparison in SNS usage, online social identity, and control variables. We received 513 useful responses, yielding a response rate of 68%. In wave 2, we asked the students to complete the ratings of their feelings of benign envy, malicious envy, self-improvement intention and negative gossiping behavior. To match the two-wave responses, the students were asked to provide the last six digits of their phone number. In total, the final sample consisted of the matched responses of 469 students, yielding a response rate of 58%. Male respondents made up 54.2% of the sample, with 51% being 18–25 years old and 42.6% have completed master's degrees. In terms of Facebook use, 31.8% use it for 3–5 h daily, with 35.4% having between 101 and 150 as their number of friends. The demographic information of the sample is presented in Table 1.

3.2. Measures

In total, this study included six constructs. These were social comparison, malicious envy, benign envy, negative gossiping, self-improvement intentions, and online social identity. All the measures (except self-improvement intention) were scored on a 5-point

Table 1
Demographic information of the sample.

	N	Percentage
<i>Gender</i>		
Male	254	54.2
Female	215	45.8
<i>Age</i>		
18–25 years old	240	51.2
26–33 years old	203	43.3
> 34 years old	26	5.5
<i>Education level</i>		
Bachelors/Undergraduate	149	31.8
Masters/Graduate	200	42.6
Doctoral Degree	120	25.6
<i>Daily Hours spent on SNS</i>		
< 1	89	19.0
1–2	67	14.3
3–5	149	31.8
> 5	164	35.0
<i>Number of Friends on SNS</i>		
101–150	166	35.4
151–200	94	20.0
201–250	109	23.2
> 300	100	21.3

Likert-type scale, ranging from (1) 'strongly disagree' to (5) 'strongly agree.' Many researchers have also suggested that a 5-point Likert-type scale is easier to understand than a 7-point scale (Dawes, 2008). For the self-improvement intention construct, respondents chose their agreement with each question on a 5-point Likert scale (ranging from 1 = extremely unlikely to 5 = extremely likely).

3.3. Social comparison

We followed the recent work of Meier and Schäfer (2018) and used the two items scale of Steers et al. (2014) to measure the non-directional social comparison intensity on Facebook. The original scale of social comparison by Steers et al. (2014) consists of six items. The four items already predetermined positive or negative outcomes of downward or upward comparison, and were excluded. The two included items are "When I am using Facebook, ..." (1) "...I pay a lot of attention to how I do things compared to how others do things" and (2) "...I want to find out how well I do things compared to others". The scale is reliable. The Cronbach's Alpha is 0.79.

3.4. Malicious and benign envy

The malicious and benign envy scale was adapted from the study of Lange and Crusius (2015), which we transferred into the SNS context. The original malicious and benign envy scale consists of five items each. One item of benign envy "if I notice on Facebook that another person is better than me, I try to improve myself" already predetermined the outcome of self-improvement and so was omitted. The sample item for benign envy is "When I envy others on Facebook, I focus on how I can become equally successful in the future." The sample item for malicious envy is "Seeing other people's achievement on Facebook makes me resent them." The scales are reliable. The Cronbach's Alpha for malicious envy and benign envy is 0.88 and 0.77, respectively.

3.5. Self-improvement intentions on SNS

The self-improvement intention scale was adopted from the study of Cramer et al. (2016) developed by Helgeson and Mickelson (1995). The self-improvement intention scale consists of four items. The example of self-improvement intention scale item is "When I see posts and photos of friends on Facebook, I intend to get better." The Cronbach's Alpha is 0.77.

3.6. Negative gossiping

The "negative gossiping" scale was adopted from the study of Brady et al. (2017). The scale was modified by operationalizing it to the context of a social media environment. The negative gossiping scale consists of five items. The example of a negative gossip scale item is "I asked someone if they have a negative impression of something that another Facebook friend has posted." The Cronbach's Alpha is 0.89.

3.7. Online social identity

The online social identity scale was adopted from the study of Oyserman et al. (2006), which was transferred into the SNS context. The online social identity scale consists of three items. An example of an online social identity scale item is "I feel a part of my social group on Facebook." The Cronbach's Alpha is 0.87.

3.8. Control variables

Some variables may confound the proposed relationships of variables. Hence, gender, age, education, daily hours spent on Facebook, and the number of Facebook friends are included in the model as control variables (Krasnova et al., 2015; Park and Baek, 2018; Pitafi et al., 2018a,b; Wei et al., 2020).

4. Data analysis and results

4.1. Common method variance (CMV)

Podsakoff et al. (2012) proposed that when data is collected from a single source, and self-reported, common method variance (CMV) bias can be introduced in a data set. Following previous studies (Cao et al., 2019; Khan and Ali, 2018; Khan et al., 2019a,b,c; Khan and Khan, 2019; Pitafi et al., 2020), we used several procedures to deal with the bias problem and ensure the validity of the data set. First, CMV was tested using Harman's one-factor test. In this analysis, six factors were generated with eigenvalues > 1.0 , and the first factor accounted for 25.6% of the variance, which is $< 50\%$. Second, the common latent factor (CLF) approach was used to analyze the problem of bias (Podsakoff et al., 2012). By this procedure, we first computed the regression weights of all the constructs. Then we included the latent factor in the research model and computed the regression weights again. Finally, we compared both sets of regression weights and found no factor was raised from the result, value < 0.20 . The results in Table 3 also indicate the inter-correlation of all the constructs ($r < 0.9$) (see: Pavlou and El Sawy, 2006). In sum, none of the procedures report common method variance bias.

Table 2
Results of reliability and validity.

Variable Name	Items	Loading	CA	CR	AVE
Social Comparison	SC1	0.73	0.79	0.68	0.52
	SC2	0.71			
Self-improvement Intention	SI1	0.82	0.87	0.88	0.66
	SI2	0.81			
	SI3	0.79			
	SI4	0.79			
Negative Gossiping	NG1	0.83	0.83	0.83	0.51
	NG2	0.78			
	NG3	0.68			
	NG4	0.65			
	NG5	0.61			
Online Social Identity	OSI1	0.88	0.87	0.87	0.68
	OSI2	0.81			
	OSI3	0.79			
Malicious Envy	MEN1	0.79	0.83	0.84	0.52
	MEN2	0.78			
	MEN3	0.70			
	MEN4	0.66			
	MEN5	0.65			
Benign Envy	BEN1	0.87	0.88	0.89	0.66
	BEN2	0.85			
	BEN3	0.78			
	BEN4	0.75			

Note: CA = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted.

Table 3
Intercorrelations, and descriptive statistics among the variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Self-Improvement	2.30	0.80	0.81										
2. Social Comparison	2.27	0.82	0.29**	0.72									
3. Negative Gossiping	1.97	0.61	0.23**	0.36**	0.71								
4. Online Social Identity	2.62	0.87	0.32**	0.16**	0.20**	0.82							
5. Benign Envy	2.32	0.74	0.32**	0.37**	0.23**	0.10*	0.81						
6. Malicious Envy	2.1	0.58	0.15**	0.41**	0.26**	0.24**	0.28**	0.72					
7.Number of SNS friends	2.3	1.16	0.07	0.08	0.06	0.11*	0.03	-0.02	NA				
8.Daily hours spent	2.8	1.1	0.19**	0.04	-0.15	0.05	0.14**	0.05	-0.007	NA			
9.Education	1.94	0.75	0.04	0.001	-0.05	0.05	0.02	0.007	-0.07	0.27**	NA		
10.Gender	1.46	0.49	-0.04	0.04	-0.01	-0.08	0.09*	0.06	-0.002	0.12**	-0.21**	NA	
11. Age	2.54	0.60	0.07	0.12**	-0.01	-0.04	0.18**	0.08	-0.03	0.21**	-0.17**	0.19**	NA

Notes: N = 469; Significant at: SD = standard deviation; Gender is coded as 1 = Male, 2 = Female; The diagonal elements are the square root of the AVE; *p < 0.05, ** p < 0.01, *** p < 0.001,

4.2. Preliminary analysis

To ensure the overall reliability and validity of our data set, we analyzed the factor loading, composite reliability (CR), average variance extracted (AVE), and Cronbach's Alpha (CA). Table 2 indicates that all the values of CA ranged from 0.79 to 0.88, which is above the standard benchmark value of 0.70 as suggested by Hinkin (1998), and values of CR were between 0.71 and 0.89, which is above the standard threshold of 0.70 proposed by Nunnally (1978). The values of AVE ranged from 0.51 to 0.68 and were above 0.50, the threshold proposed by Bagozzi and Yi (1988). Together, all results indicate that the model has good convergent validity.

Further, we analyzed the discriminant validity of the research model using the procedure, which is recommended by Fornell and Larcker (1981). According to this procedure, we compared the AVE square root with inter-correlation of all the constructs in Table 3. Findings of Table 3 indicates that AVE square root is higher than the co-relation of each variable. Therefore, the research model has acceptable level of discriminant validity.

4.3. Measurement model

To assess the scale dimensionality and discriminant validity of the study measures, AMOS (24) software was used to carry out the confirmatory factor analyses (CFAs) (Joreskog, 1969) before testing the proposed hypotheses. The fit of the full measurement model

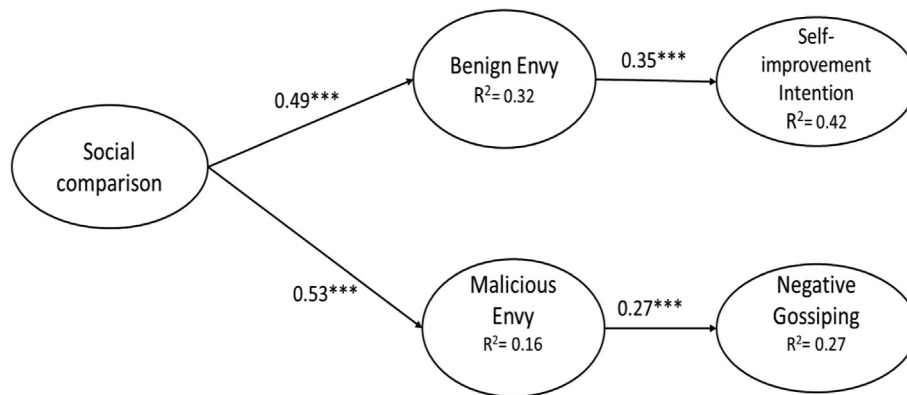


Fig. 2. Structural equation model of the hypothesized relationships (H1–H3), with age, gender, education, daily hours spent on Facebook and number of Facebook friends as controls. Observed structural equation model based on data from $N = 469$ participants. Fit indices are $\chi^2 = 1048.26$, $p < 0.001$; $\chi^2/df = 4.12$; CFI = 0.83; GFI = 0.851; RMSEA = 0.07. The correlation between residuals of benign and malicious envy = 0.03*. Scores in the figure represent standardized path coefficients. Significant at: * $p < .05$, *** $p < .001$.

was analyzed to validate the relationship of all the variables, as suggested by (Hair et al., 2010). The measurement model included six latent factors (social comparison, benign envy, malicious envy, self-improvement intention, negative gossiping, and online social identity). The results confirmed that the hypothesized six-factor measurement model fit indices are in the given range ($N = 469$, $\chi^2 = 845.11$, $df = 215$, CFI = 0.88, GFI = 0.86, RMSEA = 0.07). Thus, the full model measurement results revealed that it is a satisfactory fit for the data.

4.4. Hypothesis testing

Table 3 presents the inter-correlations and descriptive statistics among the latent variables. We found preliminary support for the hypothesized relationships. The analysis revealed that social comparison is significantly and positively related to benign and malicious envy ($r = 0.37$, $p < 0.01$ for benign envy; $r = 0.41$, $p < 0.01$ for malicious envy), and benign envy is significantly and positively associated with self-improvement intention. Moreover, malicious envy is significantly and positively associated with negative gossiping ($r = 0.26$, $p < 0.01$).

To test the proposed relationships, structural equation modeling (SEM) with AMOS (24) software and bootstrapping approach procedure with PROCESS macros in SPSS (22) software was used. The SEM results in Fig. 2 showed an adequate fit to the data ($N = 469$, CMIN = 1048.26, $df = 254$, CFI = 0.84, GFI = 0.85, RMSEA = 0.07). Fig. 2 depicts the results of the structural model. Analysis results, in addition to the path coefficient of all the relationships, indicate that the lowest value (0.16) of variance explained (R^2) by each dependent variable is above the adequate level of 0.10 (Falk and Miller, 1992). Results of SEM showed that social comparison is positively related to benign envy ($\beta = 0.49$, $P < 0.001$) and malicious envy ($\beta = 0.53$, $P < 0.001$). Benign envy was positively related to self-improvement intentions ($\beta = 0.35$, $P < 0.001$). Malicious envy was positively related to negative gossiping about SNS friends ($\beta = 0.27$, $P < 0.001$). Thus, we conclude that hypotheses 1, 2 and 3 are supported.

The Hypothesis 4 proposes the mediating effect of benign envy on the relationship between social comparison and self-improvement. Hypothesis 5 proposes the mediating effect of malicious envy on the relationship between social comparison and negative gossiping. The mediating effect was estimated using the bootstrapping approach procedure suggested by Preacher et al. (2007). The bootstrapping results showed the indirect effect of social comparison on self-improvement via benign envy (See Table 4; $\beta = 0.08$, $P < 0.001$, 95% CI [0.05, 0.123]), thus Hypothesis 4 was supported. It is also important to highlight that social comparison had a significant, direct effect on self-improvement ($\beta = 0.19$, $P < 0.001$), indicating that an individual's benign envy partially mediated the social comparison–self-improvement relationship. The results also showed that the indirect effect of social comparison on negative gossiping via malicious envy (see Table 4; $\beta = 0.03$, $P < 0.001$, 95% CI [0.001, 0.07]), thus hypothesis 5 was supported. It is also important to highlight that social comparison had a significant, direct effect on negative gossiping ($\beta = 0.28$, $P < 0.001$), indicating that an individual's malicious envy partially mediated the social comparison–negative gossiping relationship. In sum, Hypothesis 4 and 5 were supported.

Hypothesis 6 proposes the moderating effect of online social identity between the relationship of social comparison and benign envy. Hypothesis 7 proposes the moderating effect of online social identity between the relationship of social comparison and malicious envy. Following recent studies (see; Latif et al., 2020; Tariq et al., 2020; Weng et al., 2020), the moderating effects were estimated using the bootstrapping approach procedure suggested by Preacher et al. (2007). The results showed that interaction between social comparison and online social identity was positively related to benign envy (see Table 4; $\beta = 0.13$, $P < 0.01$). Hence, we found support for Hypothesis 6. Fig. 3 shows that the relationship between social comparison and benign envy is stronger when the user's online social identity is higher. Table 4 also shows that interaction between social comparison and online social identity was negatively related to benign envy ($\beta = -0.15$, $P < 0.001$). Hence, we found support for Hypothesis 7. Fig. 4 shows that the relationship between social comparison and benign envy is stronger when the user's online social identity is higher.

Table 4
Regression results for mediation and moderation.

	B	SE	t	R ²
Outcome: Benign Envy				0.19
Constant:	-0.01	0.03	-0.49	
Social Comparison	0.32	0.04	7.8***	
Online Social Identity	0.05	0.04	1.32	
Social Comparison * Online Social Identity	0.13	0.05	2.56**	
Number of SNS friend	-0.004	0.03	-0.03	
Daily Hours spent on SNS	0.06	0.03	1.75	
Education	0.003	0.03	0.085	
Gender (1 = Male; 2 = Female)	0.05	0.03	1.29	
Age	0.08	0.03	2.23*	
Outcome: Malicious Envy				0.20
Constant	0.02	0.02	0.90	
Social Comparison	0.18	0.02	7.4***	
Online Social Identity	0.09	0.02	3.6***	
Social Comparison * Online Social Identity	-0.15	0.03	-4.75***	
Number of SNS friend	-0.03	0.02	-1.7	
Daily Hours spent on SNS	0.01	0.02	0.76	
Education	-0.02	0.02	-1.05	
Gender (1 = Male; 2 = Female)	-0.005	0.02	-0.255	
Age	0.06	0.02	2.84**	
	Effect	SE	LLCI	ULCI
Indirect effect of social comparison on self-improvement though benign envy	0.083	0.01	0.05	0.123
Indirect effect of social comparison on negative gossiping through malicious envy	0.034	0.01	0.001	0.007

Notes: N = 469; Significant at: *p < 0.05, and *** p < 0.001; Bootstrap sample size = 5000; LLCI = Lower level of the 95% confidence interval; ULCI = Upper level of 95% confidence interval.

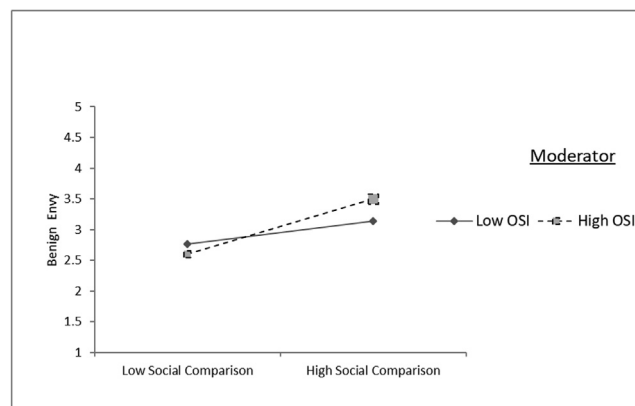


Fig. 3. The interaction of social comparison and online social identity on benign envy Note: OSI = Online social identity.

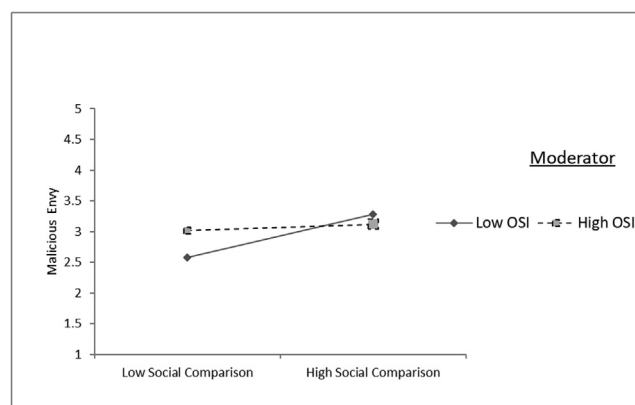


Fig. 4. The interaction of social comparison and online social identity on malicious envy Note: OSI = Online social identity.

5. Discussion

The purpose of the present study was to develop and test a model of how social comparison on Facebook associated with envy type, and how envy type uniquely associated with behavioral intentions and consequences in the SNS context. Specifically, the current study examined the moderating role of users' online social identity between the relationship of social comparison and envy type. As predicted, our findings were consistent with the hypothesized model. The results revealed that an SNS user's social comparison is positively associated to benign and malicious envy. Benign envy positively associated with the behavioral intention of self-improvement, and malicious envy positively associated with the behavior of negative gossiping about SNS friends. In this vein, the impact of social comparison on self-improvement intentions was mediated through the SNS user's benign envy, and the effect of social comparison on negative gossiping was mediated through the SNS user's malicious envy. User's online social identity moderated the relationship of social comparison and envy type, such that high online social identity strengthened the positive relationship of social comparison and benign envy, and weakened the positive relationship of social comparison and malicious envy.

6. Theoretical implications

The findings of the current study provide several strengths and contribute to social media literature in several ways.

First, this study extends the etiology of social comparison and envy type and discusses its potential behavioral effects in social media usage. This investigation broadens the research on the behavioral intentions and consequences of social comparison in SNS usage, which has been less studied in social media research (Krasnova et al., 2015; Lim and Yang, 2015).

Second, past studies revealed that when SNS users are exposed to posts and photographs on SNS, it can activate social comparison that is positively associated with feelings of envy, which, in turn, decreases the user's life satisfaction (Park and Baek, 2018), leading to SNS user burnout and positively associated with the switch intention of social media (Lim and Yang, 2015). While, the findings of our study indicate that social comparison on Facebook is positively associated with the desire to improve oneself through the underlying mechanism of benign envy, which is consistent with the assimilative effect of social comparison that motivates individuals to improve their situation by getting the same advantage possessed by their superiors (Mussweiler et al., 2004). Furthermore, the findings of our study indicate that social comparison on Facebook is positively associated with the negative gossiping behavior through the underlying mechanism of malicious envy, which is consistent with the contrastive effect of social comparison that motivates individuals to damage the advantage of others by bringing them down (Mussweiler et al., 2004). Similarly, the results of our study are consistent with those of Van de Ven (2016), who found that social comparison is positively associated with benign envy, which is related to a wish to get the target's superior advantage such as self-improvement. In contrast, social comparison associated with malicious envy, which is related to a wish to damage the target's superior advantage such as negative gossiping of SNS friends. The results depict that the social comparison theory is appropriate for explaining the social comparison process triggered through social media use, which is positively related to benign and malicious envy that, in turn, positively associated with self-improvement intentions and negative gossiping behavior respectively. Moreover, benign envy represents partial mediation between the positive relationship of social comparisons and self-improvement intentions, while malicious envy partially mediates the positive association of social comparison and negative gossiping behavior.

Finally, this study filled the research gap on the pivotal role of online social identity in predicting the envy type in SNS usage. While prior research focused on the role of personality traits in the social comparison process (Bergagna and Tartaglia, 2018; Jang et al., 2016; Lee, 2014; Ozimek et al., 2018; Schmuck et al., 2019). Aligned with social identity theory, individuals with high online social identity display identification by stimulating the feelings of benign envy and preventing the feelings of malicious envy in response to social comparison on SNS (Brewer and Gardner, 1996; Hogg, 2000; Kim and Glomb, 2014). In particular, the study results show that the social comparison process with SNS usage differs according to the level of the user's online social identity. When the user's online social identity is high, the relationship of SNS user's social comparison and their feelings of benign envy is strengthened, while the positive relationship of social comparison and malicious envy is weakened. This study extends the prior research on social comparison by using social context and investigating social identity as a moderator making it more relevant to the social domain.

7. Practical implications

The study findings have implications for policymakers, advertisers, SNS providers, SNS designers, educators, and users.

First, policymakers should hold awareness sessions among the public about the adverse effects of SNS. Also, policymakers should offer SNS users counseling sessions and conduct workshops for enhancing the feelings of benign envy, preventing feelings of malicious envy and gossiping behavior toward SNS friends, that is due to social comparisons in SNS usage (Turel et al., 2015).

Second, this study suggests that users have the intention to self-improve, and they can bring improvements in their personal, academic, and professional life. Benign envy is positively associated with the behavior of self-improvement intentions through the desirability of products the user's friends show in their posts and photos. Therefore, the advertisers can promote their products to SNS users, especially those products/services that elicit benign envy. For example, the study of Krasnova et al. (2015) found that traveling is the main reason of such envy on SNSs. Therefore, advertisers of travel companies promoting to the SNS user would be useful.

Third, the study affirms that users engage in gossiping behavior about SNS friends. Negative gossiping behavior towards SNS friends might affect the climate of SNS's and contribute to the dissatisfaction with the platform. Therefore, SNS providers should try to find ways to manage malicious envy-inducing content.

Finally, this study also suggests that SNS providers can enhance the likelihood of benign envy and reduce the likelihood of

malicious envy by inducing online selves among users. The SNS designers should construct and maintain online environments, free of technological or communicational issues, in which it is easy to establish an online social identity. Those environments should be interesting and stimulating enough to encourage frequent and convenient access and interaction with SNS friends. Clinicians and educators working with vulnerable young individuals may need to engage with perceptions related to online selves in endeavors to prevent malicious envy and induce benign envy and to offer support for alternative expressions of alignment to online social norms. Moreover, it is imperative to understand the behaviors of SNS users. Therefore, educators and policymakers should promote the wise and healthy use of social media to college-age SNS users.

8. Limitations and future research

This study has some limitations, and future research is needed. First, the data collected in this study was multi-wave and self-reported. This may be subject to common method bias. Though the data do not report a common method bias, future research can be done by other methods, particularly experiments that depict real-life SNS scenarios. Second, this study uses only one platform of SNS, which is Facebook, and our respondents originate from a similar cultural context, i.e., Pakistan. The individuals in our sample may be affected by culture. Therefore, the generalizability of this study is likely limited. Future research can check for the generalizability of the findings of this study by doing a cross-cultural study (Song et al., 2019). Furthermore, the respondents of this study are students of a university. Therefore, future research could also explore diversified occupational contexts other than students.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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