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RESEARCH ARTICLE

Online Deceptive Impression Management: Self-admission and Other Estimates of False Facebook-selves

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Abstract:

Background:

People deceive online. There is, however, mixed evidence about whether people present themselves falsely on Facebook. We investigated to what extent people present their true selves on Facebook. As generally, people estimate their own behavior as 'less evil' than the behaviors of others, we also assessed people's estimations of whether other people present their true selves on Facebook.

Methods:

In two studies (n=94, n=189), participants filled in a survey asking them to report how frequently and intensely they falsely present themselves on Facebook and in which ways. They were also asked to estimate this for other Facebook users.

Results:

The results showed that the majority of participants were not always honest on Facebook regarding their personality, unbeneficial information, and emotional state. A minority of participants provided false information in comments. We also obtained the 'less deceptive than thou' effect: Participants estimated that others more frequently and intensely engage in deception.

Conclusion:

The current research has led to new findings showing that the majority of the participants engage in deceptive self-presentational behavior and estimate others to be more deceptive than they are.

Keywords: Impression management, Deception, Facebook, Self-presentation, Social networks, Social networks, Internet.

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1. INTRODUCTION

In the last decade, the accessibility of the internet and online platforms has increased enormously. This indicates the importance of the internet in our everyday lives. With 4.66 billion users worldwide in 2021 (www.statista.com), especially the usage of social networks as platforms to create a profile and an online identity has grown [1]. The accessibility of mobile internet on smartphones has mediated these developments. In 2019, more than 50% of all adults between 16 and 74 years in the European Union used the internet to participate in social networks and to communicate privately.

The high accessibility and usage of social networks offer great opportunities for people to present themselves in a virtual

environment, and to create an online identity that they can carefully control. Uncertainty about the self, peer pressure, and for adolescents the process of detachment from the parents, strengthen the necessity to form an individual and unique identity. Especially the image that others get of a person and how they evaluate it is important. Social networks provide perfect environments to create this unique identity. In general, online communication via social networks permits users to have more control over their self-presentation than in offline situations. Consequently, users can engage in careful impression management.

The first aim of this study is to investigate to what extent Facebook users engage in deceptive self-impression management and in what ways they do so. The second aim is to examine whether differences exist between peoples' estimations of their own and other peoples' deceptive behavior

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on Facebook.

1.1. Impression Management

According to impression management theory, social interactions are characterized by the reciprocal expectations of communicators and their intentions to control the impression they make on the other person [2]. People anticipate the potential reactions of others before they engage in certain behavior. The evaluation from the interaction partner is a very important motivational factor to present oneself in a positive light and try to influence the impressions the interaction partner has [3]. The evaluation by the interaction partner is direct feedback about one's behavior, which may serve to improve or confirm the self-concept by paying special attention to positive evaluations.

Communication in online social networks is different from communication in face-to-face situations and offers many possibilities to present oneself in a positive, credible light. The asynchronicity of online contexts provides users with opportunities that are not possible in face-to-face interactions such as editing one's presentation, deleting mistakes, and thinking carefully about content to communicate before sharing [4]. In face-to-face situations people often need to react spontaneously, depriving time to carefully edit the way the self is presented. With people's innate need to have a positive self-concept, social media users strive to enhance their profiles in a socially desired way [5]. Also, the constant public evaluation process may be a strong motivator for people to take good care of one's online image. Thus, self-presentation in online contexts can lead to more self-improvement, self-enhancement, and self-promotion.

Also, as online behavior is mainly verbal and most nonverbal information gets lost, it is much easier to deceive in online environments than in natural settings [6]. In a natural setting, controlling nonverbal behavior is very difficult, thus an important cue for people to uncover deception [4]. The absence of these cues together with opportunities to carefully edit one's self-presentation may provoke people to deceive [4, 7] and create an online identity that differs from their offline identity [8].

1.2. Deceptive Impression Management

Deception is defined as: 'an act that is intended to foster in another person a belief or understanding which the deceiver considers false' [9, 3]. Impression management becomes deception when the person intends to foster an impression that (s)he considers to be false. So whereas impression management is concerned with highlighting aspects of the self that are relevant to the specific situation [10] and being polite to ensure people feel treated with dignity and respect [11], deceptive impression management regards a deliberate attempt to create an impression that does not represent a person's true self. So impression management may lead to deception by deliberately concealing information about oneself or giving inaccurate information [12]. Other ways to deceive people include representing an inaccurate emotional state and adopting opinions that are not held.

Research on whether *deceptive* online self-presentation occurs on Facebook so far showed mixed evidence. Gosling and colleagues found that the majority of user profiles give accurate representations of offline identities, though some self-enhancement may occur [13 - 15]. Michikyan, Subrahmanyam, and Dennis [16], however, concluded that Facebook users do engage in deceptive self-impression management to idealize their selves online [17, 18]. According to Warkentin, Woodworth, Hancock, and Cormier [19], the frequency and seriousness of deception in CMC are related to the extent to which the online identity is connected to the real world identity, for instance using a real name, a picture, and the presence of real acquaintances. Ellison, Heino, and Gibbs [20] showed that many users of online platforms are aware of presenting themselves in a more idealized way, such as posting attractive pictures from earlier times and giving inaccurate information about physical characteristics. Toma and Carlson [21] showed that their participants were aware that their Facebook profile comes across as more positive than in reality, however, not so positive that it presents an idealized self. In the eyes of many users, however, the biased information presented on Facebook may not be seen as deceptive. A reason for this mixed evidence may be that admitting deceptive self-presentation is socially sensitive and hard to study [22].

In the current studies, we explore whether Facebook users engage in deception by investigating whether they estimate themselves as presented on Facebook as a representation of their true selves. Since deceptive self-impression management is a common everyday phenomenon [2], strengthened by online environments [3, 23], it is assumed that the majority of Facebook users engage in deceptive self-impression management, presenting an inaccurate self on the social network (Prevalence hypothesis). Also, we explore in what ways people deceive on Facebook.

1.3. Deceptive Impression Management by others

As behavior can be estimated differently when assessed for oneself than for other people [24 - 28], we also explored to what extent Facebook users estimate other people to not represent their true selves on Facebook. Previous research on predicting immoral behavior for the self and others showed that people tend to believe that they are less evil than others. More specifically, people predicted that they are less likely to lie and steal than other people [26].

This tendency for self-righteousness does not seem to be due to social desirability bias as self-righteousness occurs more strongly for immoral than moral behaviors [26, 27]. Instead, this tendency can be explained by peoples' motivation to view themselves positively [29] and by differences in information people rely on when estimating behavior for themselves versus for others [30 - 32]. When evaluating their own behavior, people tend to rely on their intentions and conscious motives. As people lack access to the mental states of others, people alternatively focus on observable behaviors. For immoral behaviors, peoples' own intentions are often not aligned with observable behaviors. This is due to people often justifying their immoral behaviors [33, 34] and the belief that their behavior is guided by ethical intentions [35]. This 'less evil

than thou'-effect has been shown in the media where people communicate and respond one-on-one to each other (e.g., email, instant messaging, and face-to-face communications) [6], but has not yet been investigated in a medium focused on sharing information with a lot of people at the same time, such as on Facebook. We expect to replicate the 'less evil than thou'-effect for the estimations of deceptive behaviors on Facebook for self and others (Less deceptive than thou hypothesis).

The data of the reported studies are available *via* the Open Science Framework (https://osf.io/yt3v7/?view_only=39db0c40feae45608d3e87daa6e55016).

2. METHODS STUDY 1

2.1. Participants

Participants have been recruited *via* the test-person system (which contains a credit-point reward) for psychology students of the University of Twente as well as through network sampling. Inclusion criteria consisted of participants having a Facebook account and being older than 18 years. In total, 114 participants took part in the study of which 20 were excluded because they did not finish the questionnaire or did not participate seriously (*i.e.*, needed less than 5 minutes to fill in the questionnaire). The final sample consisted of 94 respondents, 29 men and 65 women with a mean age of 23.37 years ($SD = 4.83$; range: 18 to 57). Participants had various nationalities: 22 Dutch, 46 German, 23 Italian, and 3 other Western-European countries.

2.2. Materials and Procedure

This study was approved by the Ethics Committee of the University of Twente in Enschede (approval number BCE16206), the Netherlands, and adheres to ethical guidelines specified in the APA Code of Conduct as well as Dutch ethics guidelines.

The study was conducted from May 2, 2016, to May 15, 2016. The participants were approached *via* an e-mail containing a link to the questionnaire. First, participants were informed about the goals and conditions of the study and it was explained that their answers would be anonymous and treated with confidentiality. The time to fill in the survey which was approximately 20 minutes. Participation was voluntary, and respondents were allowed to stop whenever they wanted to. After accepting the conditions of the participation and confirming the usage of a Facebook account, participants could start to fill in the survey.

The questionnaire began with the collection of demographics (age, gender, and nationality), the general usage of Facebook (frequency), and the number of friends on the social platform. This was followed by filler items about the amount of time participants spend on different activities (e.g., editing their personal profiles, looking at others' profiles), and evaluating the importance of the impression they could make on others. Participants were also asked to estimate this for other Facebook users.

The prevalence of deception was measured by asking

participants to indicate how often and how far they deviate from reality when presenting themselves on Facebook. They were asked to indicate whether they express themselves on Facebook in a way that does not reflect their accurate self, regarding their personality, opinions written in comments, concealing information, and their emotional state on a 5-point Likert-Scale (1=*Never* to 5=*Always*). An example question is: "*When posting something on Facebook, I conceal information that would not be beneficial for my self-presentation*". Prevalence scores of deception are reflected by participants who answered differently than "*Never*". In case the participants had a different answer than "*Never*", they were asked to indicate how far the expressions were from reality, again on a 5-point Likert-Scale (1=*Far away* to 5=*Close*).

Participants' estimations of how much other people deceive were measured by repeating these questions about how often and how far people deviate from reality when presenting themselves on Facebook, with the only difference of making statements about *other* users.

After that, we measured participants' Inclusion of the Self in the Facebook Self (ISFS). This is an adjusted version of the Inclusion of Other in the Self Scale (IOS) [36]. Participants were asked to indicate to what extent their actual self and the self as presented on Facebook would overlap. They could choose between six images, each containing two circles, some of them closer, some of them farther away from each other. One of the two circles represented the actual self and the other circle represented the representation of the self on Facebook. The higher scores on the ISFS scale, the closer the two circles symbolizing oneself and the self as presented on Facebook, thus representing a more honest self-presentation. Participants were also asked to estimate to what extent the actual self and the self as presented on Facebook would overlap with other Facebook users.

As there is a lack of research on whether peoples' personality influences the prevalence and ways of deception [37], we explored this relationship. Participants were given the "Brief HEXACO Inventory" (BHI) [38]. As the reliability of the factors (honesty, emotionality, extraversion, agreeableness, conscientiousness, and openness) was low in both studies (range Study 1: .31-.63; Study 2: .39-.64) and the results of the relationship between personality and the prevalence and ways of deception were inconsistent, the factors were not considered reliable and the analyses were not reported. The questionnaire ended with the possibility to openly comment on the study. The entire questionnaire was available in Dutch as well as English.

3. RESULTS AND DISCUSSION

3.1. Descriptive Statistics about Facebook usage and Friends

Participants had a mean usage of Facebook between "several times per day" and "once a day" ($M = 1.29$, $SD = 0.68$) thereby spending time between 30 minutes and one hour per day. The mean number of Facebook friends was 514 ($SD = 401$).

3.2. Prevalence of Deception

The following percentages represent participants who did not report “never” to the questions about how often they deviate from reality when presenting themselves on Facebook for self and other estimates. The majority of participants reported describing *themselves* in a way that is not a precise description of their actual personality (64.4%) and of expressing their emotional state (66.0%) and indicated to conceal information (73.3%). A minority of the participants did not precisely represent their actual opinions (38.7%).

Also, the majority of participants estimated that *other people* do not present their actual selves regarding personality (97.8%), opinions (94.7%), concealing information (97.9%), and emotional state (98.9%). See also Table 1 for percentages of the prevalence of deceptive behavior.

Table 1. Prevalence of deceptive behavior for Study 1 (i.e., the percentages of participants who did not report never to the question of how often they deviate from reality).

-	Self	Others
Personality	64.4%	97.8%
Opinion	38.7%	94.7%
Concealing information	73.3%	97.9%
Emotional state	66.0%	98.9%

Separate paired sample t-tests investigating the difference between self-admission and other estimates for the frequency of deceptive behaviors showed that participants estimated others to deceive more often than themselves about their personality, $t(92) = -11.63, p < .001, 95\% \text{ CI } [1.24, 1.76]$, Hedges’s $g_{av} = 1.63$, opinions, $t(92) = -12.00, p < .001, 95\% \text{ CI } [1.08, 1.50]$, Hedges’s $g_{av} = 1.05$, concealing information, $t(92) = -6.55, p < .001, 95\% \text{ CI } [0.69, 1.29]$, Hedges’s $g_{av} = 0.94$, and emotional state, $t(92) = -7.94, p < .001, 95\% \text{ CI } [0.78, 1.30]$, Hedges’s $g_{av} = 1.01$. See Table 2 for means and standard deviations on the frequency of deception for both self-admission and others estimates.

Table 2. Self and others' estimates for the frequency of deception for Study 1 (the higher the score, the more frequent the deception, 1 = never, 5 = always).

-	Self		Others	
	M	SD	M	SD
Personality	2.02 _a	1.05	3.52 _b	0.75
Opinion	1.55 _a	0.85	2.84 _b	0.85
Concealing Information	2.41 _a	1.17	3.40 _b	0.91
Emotional State	2.26 _a	1.22	3.30 _b	0.79

Note. Means with noncommon subscripts differ significantly ($p < .05$) within each row.

3.3. Deviation from Reality

Participants who deviated from reality and indicated others to deviate from reality, indicated that other people deviated more from their actual selves when presenting the self on Facebook compared to their own deviation regarding personality, $t(57) = -6.35, p < .001, 95\% \text{ CI } [0.83, 1.59]$, Hedges’s $g_{av} = 1.08$, opinions, $t(35) = -3.04, p = .004, 95\% \text{ CI } [0.24, 1.16]$, Hedges’s $g_{av} = 0.60$, concealing information, $t(64) = -7.11, p < .001, 95\% \text{ CI } [0.93, 1.65]$, Hedges’s $g_{av} = 1.15$, and emotional state, $t(60) = -2.09, p = .04, 95\% \text{ CI } [0.01, 0.83]$, Hedges’s $g_{av} = 0.35$. See Table 3 for means and standard deviations on the deviation from reality for both self-admission and others estimates.

[0.24, 1.16], Hedges’s $g_{av} = 0.60$, concealing information, $t(64) = -7.11, p < .001, 95\% \text{ CI } [0.93, 1.65]$, Hedges’s $g_{av} = 1.15$, and emotional state, $t(60) = -2.09, p = .04, 95\% \text{ CI } [0.01, 0.83]$, Hedges’s $g_{av} = 0.35$. See Table 3 for means and standard deviations on the deviation from reality for both self-admission and others estimates.

Table 3. Self and others' estimates for deviation from reality for Study 1 (the higher the score, the closer to reality, 1 = far away, 5 = close).

-	Self		Others	
	M	SD	M	SD
Personality	3.88 _a	1.20	2.67 _b	1.00
Opinion	3.81 _a	1.19	3.11 _b	1.09
Concealing Information	3.89 _a	1.13	2.60 _b	1.09
Emotional State	3.31 _a	1.19	2.89 _b	1.19

Note. Means with noncommon subscripts differ significantly ($p < .05$) within each row.

Also, for the Inclusion of the Self in the Facebook Self scale, participants indicated the mean distance between the ISFS circles was bigger for estimates for others ($M = 3.49; SD = 1.34$) than for the self ($M = 4.42; SD = 1.68$), $t(92) = 5.05, p < .001, 95\% \text{ CI } [0.57, 1.29]$, Hedges’s $g_{av} = 0.61$, indicating that participants reported others to deviate more from reality on Facebook than they themselves do.

4. STUDY 2

The results of Study 1 showed that the majority of participants did not always present their true selves on Facebook regarding their personality, emotions, and concealing information. The minority of participants did not always present their true opinions on Facebook. The results also showed that participants estimated that other people are more likely to engage in deception on Facebook and also present themselves less accurately compared to their own presentations.

In the second study, we aim to replicate these effects. In this study, we adjusted the questions posed to participants to more closely match the definition of deception. In the first study, we asked participants whether they described themselves in a way that does not reflect their true selves. However, for self-presentation to be deceptive self-presentation, people should *intentionally* misrepresent themselves because they want to give *others* an inaccurate impression. Therefore in the present study, participants were asked whether they intentionally describe themselves in a way that gives others an inaccurate image of themselves.

In this study, we posed an additional question to investigate how the self and the Facebook-self are related. We explored to what extent they view their Facebook-self and those of others to either be a presentation of the true self, a selective presentation of the true self, or a presentation including false information. We expect to replicate the ‘more deceptive than thou’ effect that people view their Facebook-self as more often reflecting reality, whereas the Facebook-selves of others are estimated to more often include false information.

4.1. Methods

4.1.1. Participants

In total, 189 MTurk participants of 18 years or older with a Facebook account took part in the study. The sample consisted of 100 men, 88 women, and 1 “other“ with a mean age of 36.47 years (*SD* = 10.68; range: 18 to 77).

4.1.2. Materials and Procedure

The study was conducted from February 5, 2019, to February 6, 2019. The procedure and used materials are the same as in Study 1, with a few exceptions. First, the prevalence of deception items was adjusted to more closely match the definition of deception. Participants were now asked whether they intentionally describe themselves in a way that gives others an inaccurate image of themselves. They were asked to indicate how often they describe themselves inaccurately and how far they deviate from reality. As in Study 1, participants filled in the Inclusion of the Self in the Facebook Self scale (ISFS).

The additional question to investigate how the self and the Facebook-self are related, asked participants, taking all of their Facebook activities together, whether the self as presented on Facebook 1) does not always reflect reality because they present parts of themselves that do not represent who they actually are (false information), 2) does not always reflect reality because they do not share all parts of themselves, but what they do share is not distorted (selection of information), or 3) does always reflect who they are in real life (no deception). They could choose between these three answer possibilities.

Finally, as in Study 1, participants filled in the “Brief HEXACO Inventory” (BHI), which was not reported due to unreliable factors and inconsistent results across both studies.

5. RESULTS AND DISCUSSION

5.1. Descriptive Statistics of Facebook usage and Friends

As in Study 1, participants had a mean usage of Facebook between “several times per day” and “once a day” (*M* = 1.63, *SD* = 0.97) thereby spending between 30 minutes and one hour per day on this medium. The mean number of Facebook friends was 428 (*SD* = 739).

5.2. Prevalence of Deception

Similar to the results of Study 1, a majority of participants reported intentionally describing *themselves* in a way that does not represent their actual personality (54.0%) and their accurate emotional state (59.3%) and reported intentionally concealing information about themselves (54.0%). Further, 43.9% indicated posting comments that do not represent their actual opinion. The results of the additional question showed that, generally, the minority of the participants claim to be the same person in real life as on Facebook (36.5%).

Additionally, a majority of participants estimated *other Facebook users* to not present their actual selves regarding personality (96.8%), emotional state (94.2%), concealing

information (94.7%), and opinions (94.7%). See also Table 4 for percentages for the prevalence of deceptive behavior.

Table 4. Prevalence of deceptive behavior for Study 2 (the percentages of participants who did not report “never” to the question of how often they deviate from reality).

-	Self	Others
Personality	54.0%	96.8%
Opinion	43.9%	94.7%
Concealing information	54.0%	94.7%
Emotional state	59.3%	94.2%

Separate paired sample t-tests investigating the difference between self-admission and other estimates for the frequency of deceptive behaviors showed that, again, participants estimated others to deceive more often than themselves about their personality, $t(188) = -15.40, p < .001, 95\% \text{ CI } [1.17, 1.51]$, Hedges’s $g_{av} = 1.49$, opinions, $t(188) = -15.15, p < .001, 95\% \text{ CI } [1.10, 1.44]$, Hedges’s $g_{av} = 1.40$, concealing information, $t(188) = -14.71, p < .001, 95\% \text{ CI } [1.14, 1.50]$, Hedges’s $g_{av} = 1.39$, and emotional state, $t(188) = -13.05, p < .001, 95\% \text{ CI } [0.96, 1.30]$, Hedges’s $g_{av} = 1.20$. See (Table 5) for means and standard deviations on the frequency of deception for both self-admission and others estimates.

Table 5. Self-admission and others’ estimates for the frequency of deception for Study 2 (the higher the score, the more frequent the deception, 1 = never, 5 = always).

-	Self		Others	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personality	1.88 _a	1.01	3.22 _b	0.76
Opinion	1.69 _a	0.96	2.96 _b	0.85
Concealing Information	1.94 _a	1.02	3.26 _b	0.86
Emotional State	1.99 _a	0.99	3.12 _b	0.88

Note. Means with noncommon subscripts differ significantly ($p < .05$) within each row.

5.3. Deviation from Reality

Similar to Study 1, participants who deviated from reality and indicated others to deceive from reality, indicated that other people deviated more from their actual selves when presenting themselves on Facebook compared to their own deviation regarding concealing information, $t(100) = 5.09, p < .001, 95\% \text{ CI } [0.39, 0.87]$, Hedges’s $g_{av} = 0.61$. In contrast to the findings of Study 1, there were no differences for personality, $t(100) = -0.56, p < .58, 95\% \text{ CI } [-0.23, 0.41]$, Hedges’s $g_{av} = 0.08$, opinions, $t(81) = -1.64, p = .11, 95\% \text{ CI } [-0.07, 0.59]$, Hedges’s $g_{av} = 0.23$, and emotional state, $t(109) = -0.77, p = .45, 95\% \text{ CI } [-0.16, 0.36]$, Hedges’s $g_{av} = 0.10$. See (Table 6) for means and standard deviations on the deviation from reality for both self-admission and others estimate.

Additionally, for the Inclusion of the Self in the Facebook Self scale, participants estimated others to deviate more from reality on Facebook ($M = 3.88; SD = 1.12$) than they themselves ($M = 5.03; SD = 1.23$), $t(187) = 11.34, p < .001, 95\% \text{ CI } [0.95, 1.35]$, Hedges’s $g_{av} = 0.97$.

Table 6. Self and others' estimates for deviation from reality for Study 2 (the higher the score, the closer to reality, 1 = far away, 5 = close).

-	Self		Others	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personality	3.13 _a	1.22	3.04 _a	1.05
Opinion	3.41 _a	1.23	3.15 _a	1.01
Concealing Information	3.42 _a	1.11	2.79 _b	0.93
Emotional State	3.22 _a	1.10	3.12 _a	0.97

Note. Means with noncommon subscripts differ significantly ($p < .05$) within each row.

5.4. Relation self and Facebook-self

A Chi-Square analysis regarding how their self is related to their Facebook self, revealed a difference between estimations for self and others, $\chi^2(4) = 22.63$, $p < .001$. This showed that people indicated their self as presented on Facebook more often to be a selection of their true self (48.7%) or an exact representation of their true self (36.5%) than a (partly) false representation (14.8%), whereas they indicated the selves of other people to be more often a (partly) false representation (48.7%) or a selection of their true selves (46.6%) rather than an exact representation of their true self (4.8%). See also (Table 7) for percentages for self-admission and other estimates.

Table 7. Relation between self and Facebook-self of self and others' estimates for Study 2.

	False Information	Selection of Information	No Deception
Self	14.8%	48.7%	36.5%
Other	48.7%	46.6%	4.8%

6. GENERAL DISCUSSION

The results of both studies showed that the majority of Facebook users engaged in deceptive impression management, leaving an online image that did not represent their actual offline identities. The majority of the respondents admitted to not always being honest about their personality and emotional state and admitted to concealing unbeneficial information about themselves. Also, the minority of the respondents admitted to writing comments that did not represent their actual opinion. More than 90% of the respondents estimated others to not always be honest on Facebook regarding their personality, concealing unbeneficial information, writing comments, and their actual emotional state. Participants estimated others deceive more often on Facebook than they themselves do. Also, they estimated the self as presented on Facebook to deviate more from reality for other Facebook users than for themselves. Finally, the results of Study 2 showed that participants assessed other people to be more likely to falsely present themselves on Facebook, whereas they assessed themselves to be more likely to present a selection of their true selves.

Previous studies showed mixed evidence regarding the

prevalence of deception on Facebook [13, 14, 16 - 18]. The present studies asked participants themselves to what extent their self as presented on Facebook is a true representation of their actual self. The results confirm our prevalence hypothesis that the majority of people do not represent their true selves on Facebook. We extend previous findings by exploring in what ways people deceive. The majority of people deceive about their personality, conceal unbeneficial information about themselves, and are dishonest about their emotional state. This was not obtained for expressing opinions. Possibly, people are more honest about their opinions than the other aspects, as writing comments that do not represent their actual opinion is the most active manner of deceiving. The other aspects reflect a more passive way of deceiving and mostly have a true core based on reality [7]. These contents can then be edited or presented in the desired light. Alternatively, it may be the case that the admission of writing false opinions is different from admitting deception of the other aspects due to this behavior being regarded as less socially desirable. The other estimate about this channel showed that the prevalence of this type of deception is very high.

The discrepancy between the self-admission and other estimates may suggest that not all participants admitted their deceptive behavior, as it is highly unlikely that all participants were less deceptive than the average of other people. Participants estimated others to deceive more and deviate more from reality when doing so compared to their own behavior. These results support the 'more deceptive than thou' hypothesis and can be explained by a combination of people being motivated to view themselves positively [e.g., 29] and differences that exist in information people rely on when estimating behavior for themselves versus for others [e.g., 30]. People evaluate and interpret their own behavior using their intentions and motives. Most people believe that their behavior is guided by ethical intentions and justify their immoral behaviors [e.g., 33, 35]. When people evaluate and interpret the behaviors of others, they rely on observable behaviors. This explains why people report deceiving less and also report deviating less from reality than they probably do in reality.

This mechanism can also be observed in the results of the relationship between their actual self and the self as presented on Facebook. Whereas participants judge most other people to be deceptive by either giving false information or by presenting a selection of their actual selves, they judge themselves to be more honest by presenting a selection of their actual selves or presenting their true selves (without omissions). These results corroborate the explanation of the 'less evil than thou' mechanism that participants base judgments of their own behavior on the intentions they are aware of (which are, most of the time, positive), while they do not have to access to the intentions of others. Yet, participants in Study 2 were explicitly asked whether they *intentionally* presented themselves differently to create an inaccurate impression in others. So even though the majority of participants admitted to intentionally providing an inaccurate representation of the self, they still interpret this behavior as either presenting a selection of their actual self or—even more inconsistent—a 100% accurate representation of their actual self. This suggests that the

intention behind their behavior is evaluated more positively than the estimated intention behind the behavior for others, which results in interpreting their behavior as being deceptive differently.

The results showed differences between the two studies regarding the deviation from reality. In Study 1, participants judged others to deviate more from reality than themselves regarding their personality, concealing unbeneficial information, writing comments, and their actual emotional state, whereas in Study 2 this difference was only present for concealing information. It is hard to explain these differences between the two studies as they were very similar. It is conceivable, however, that as the questions in Study 2 were phrased more in line with the definition of deception, participants were less likely, despite their biases, to accuse others of deviating more from the truth than they do. This interpretation can, however, not explain why they did not do so for estimating the *frequency* of deception. Importantly, for the overall question of to what extent their self as presented on Facebook deviated from their actual self, participants judged others to deviate more in both studies.

STRENGTHS, LIMITATIONS, AND IMPLICATIONS

A limitation of the studies is that deceptive behavior on Facebook is measured by participants' self-reported deception and deviation from reality. As the admission of deceptive behavior is a sensitive topic, it is possible to have a social desirability bias in the findings. Thus the prevalence results indicate the percentage of participants who admits deception, not who engage in deception. The finding that the majority of participants already admit deception, shows that at least deception is very common on Facebook. The higher estimations of deceptions for other Facebook users suggest that actual deception rates may be higher than the rates for self-admission. Further research including a comparison between self-admission questionnaires and real Facebook profiles is recommended [39].

The findings can be of great importance concerning well-being, especially among adolescents. Previous research has shown that Facebook use is strongly related to well-being in a way that individuals who spend more time observing other people's profiles have lower self-esteem and lower degrees of well-being [5, 40]. It is assumed that adolescents who see the "perfect lives" of others might regard their own lives as less worthwhile. A recent study showed that deceptive online self-presentation is linked with depression [41]. Preventive informational interventions at high schools could use the findings from this study, showing that people's actual self and the self as presented on Facebook differ. It could help adolescents to get a more reflective and differentiated view of the things they see while surfing on Facebook.

CONCLUSION

The current research has led to new findings showing that the majority of the participants engage in deceptive self-presentational behavior and estimate others to be more deceptive than they are.

ETHICAL STATEMENT

This study was approved by the Ethics Committee of the University of Twente in Enschede (approval number BCE16206). The Netherlands adheres to the ethical guidelines specified in the APA Code of Conduct as well as Dutch ethics guidelines.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The data of the reported studies are available *via* the Open Science Framework (https://osf.io/yt3v7/?view_only=39db0c40feae45608d3e87daa6e55016).

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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