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Me, My Selfie, and I: The Relations Between Selfie Behaviors, Body Image, Self-Objectification, and Self-Esteem in Young Women

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Due to the enormous popularity of social networking sites (SNSs), online and offline social lives seem inextricably linked, which raises concerns for how SNS use relates to psychological health. Similarly, the omnipresence of *selfies* on SNSs—a form of appearance-related exposure—raises concerns regarding psychological health. This study aimed to investigate the relationships between body image, self-objectification, self-esteem, and various selfie behaviors among young women ($N = 179$). We hypothesized that a worsened body image (i.e., higher body dissatisfaction or lower body appreciation), higher levels of self-objectification, and lower self-esteem would precede greater engagement in selfie behaviors. Structural equation modeling showed that body appreciation is associated with greater engagement in selfie selection and deliberate posting, and that self-objectification is related to greater engagement in all selfie behaviors assessed. In support of our proposed model, a reversed model was also tested that showed poorer results. These findings suggest that body image may serve not only as an outcome of SNS use but also as a motive preceding selfie behaviors.

Public Policy Relevance Statement
Because many young people use social network sites (SNSs) and selfies extensively in their everyday lives, it is important to better understand the (reciprocal) relations between SNSs and selfies on the one hand, and body image and self-esteem on the other hand. Results from our study showed that young women who appreciated their body to a higher extent were also very likely to be engaged in selecting their selfies and deliberate selfie posting on SNSs, and those who regarded their bodies more as physical objects were also more engaged in selfie behaviors pertaining to selecting, editing, and online posting of selfies. Further, guiding future research and intervention development, our research findings imply that SNS use and body image are intertwined, in that body image serves not only as an outcome of SNS use but also as a motive for being engaged in selfie behaviors.

Keywords: selfies, body image, self-objectification, self-esteem, online self-presentation

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Social media are extremely popular, with 86% of 18–29-year-old individuals accessing social networking sites (SNSs) such as *Facebook, Instagram, Pinterest,* and *Twitter* (Pew Research Center, 2017). In fact, SNSs have become the most commonly accessed websites on the Internet (Tiggemann & Slater, 2014). Unlike traditional forms of media, such as magazines or movies, SNSs allow individuals to be both consumers and producers of content (Holland & Tiggemann, 2016). For instance, SNS users can selectively choose to join a group, share content, post their own content, and post status updates, videos, images, or tweets. Moreover, many people can no longer avoid social media, as they are used for communication in various settings of daily life, such as school or work. The widespread use of SNS seems currently indispensable in everyday life and with that, online and offline social lives seem inextricably linked to each other. This state of affairs most likely has implications for social relationships, health, and well-being, and consequently, researchers increasingly examine how SNS use relates to various aspects of psychological health (Kim & Lee, 2011; Strubel, Petrie, & Pookulangara, 2016; Valenzuela, Park, & Kee, 2009). One specific form of SNS use, which began just a few years ago, has quickly become one of the most popular activities: posting selfies. *Selfies* refer to pictures of oneself, taken by oneself (Fox & Rooney, 2015). More than 17 million selfies are uploaded to social media each week (Winter, 2014), and "photo-sharing social networking sites (SNSs) have created a 'selfie-craze'" (Lee & Sung, 2016, p. 347). Today, on Instagram alone, 337 million selfies can be found through #selfie (Instagram, 2018). The abundant use of *selfies* similarly raises questions concerning psychological health and well-being, as elaborated below. The present article aims to investigate the relationships between selfie behaviors and body image, self-objectification, and self-esteem in young women.

Selfies and Body Concerns

Body image consists of an individual's thoughts, feelings, and perceptions of his or her own body (Cash, 2004). Many studies that have investigated the relationship between SNS use and psychological health have included assessments of body image. A recent systematic review has reported a relation between SNS use and body image-related outcomes (Holland & Tiggemann, 2016). This review found that, across methodologies, SNS use was associated with indices of a negative body image, such as greater body dissatisfaction and body concern (see also Strubel et al., 2016). However, given that *not all* studies found a relationship between SNS use and a more negative body image, Holland and Tiggemann (2016) advised that investigating *specific* aspects of SNS use may provide more useful information than looking at *overall* SNS use alone (e.g., number of hours spend on Facebook). Indeed, Meier and Gray (2014) found that *overall* Facebook use was not related to a more negative body image, but *specifically* exposure to *appearance-related* content on Facebook was. Similarly, Thompson and Lougheed (2012) found that particularly exposure to Facebook pictures instigated a negative body image. Hence, appearance-focused content (like pictures) is more likely to influence body-related concepts, because it instigates comparison in this domain (cf. social comparison theory; Festinger, 1954; Jones, 2001; Schutz, Paxton, & Wertheim, 2002). In line with this, Meier and Gray (2014) concluded that engaging in appearance-related activities on Facebook, such as posting photos of oneself and one's friends, was associated with increased weight dissatisfaction, drive for thinness, internalization of appearance ideals, and self-objectification. The latter refers to the tendency to evaluate and value oneself based predominantly on appearance, rather than other, internal qualities of the self (Fredrickson & Roberts, 1997; Meier & Gray, 2014).

Selfies particularly pertain to appearance-related exposure on SNSs. McLean, Paxton, Wertheim, and Masters (2015) were the first to look specifically at the potential role of taking and sharing selfies as one specific form of appearance-related exposure on SNSs. Namely, they investigated the roles of *photo investment*, including concerns about photo quality and how photos portray the individual, and *photo manipulation*, referring to the use of photo-editing techniques prior to sharing. Their results showed that larger engagement in selfie-related SNS use was related to more body concerns among young women, and this relationship was stronger for those reporting more photo invest-

ment and manipulation. Similarly, a recent study by Cohen and colleagues (Cohen, Newton-John, & Slater, 2017) showed that taking and sharing selfies was associated with increased body dissatisfaction and bulimia symptomatology among young women.

The current study contributes to the present literature on SNS use, selfies, and body image in several ways. Theorizing and previous studies on the associations between SNS use and body-related outcomes show inconsistencies. Most research argues from SNS use to (negative) body-related outcomes; however, we argue that a reversed process is also possible. That is, specific media are utilized to meet specific needs (cf. uses-and-gratifications theory; Katz, Blumler, & Gurevitch, 1973). In the following, we will first briefly review the most commonly applied theories and then elaborate on our "reversed process."

Research on SNSs and body image thus far has proposed that engaging in SNSs (including taking and sharing selfies) can cause a more negative body image and higher self-objectification (Cohen et al., 2017; Holland & Tiggemann, 2016; McLean et al., 2015). Two theories commonly used to explain this relationship are the sociocultural theory (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999) and objectification theory (Fredrickson & Roberts, 1997). In brief, the *sociocultural theory* proposes that media can encourage women to internalize the beauty ideal and engage in appearance-based social comparisons with the women in such imagery. As this beauty ideal becomes important—yet can almost never be achieved—women may experience a negative body image. In the specific case of selfies, the images can be body centric or facial centric. Here, the beauty ideals for women pertain to body features such as being slender, toned, and fit (Grabe, Ward, & Hyde, 2008; Tiggemann & Zaccardo, 2015) and facial features like, for example, having a smooth skin, large eyes, a slim face, and full lips (also see Pusic, Klassen, Scott, & Cano, 2013). Holland and Tiggemann's review (2016) showed that the relationship between SNS use and a more negative body image was mediated by appearance-based social comparisons and internalization of appearance ideals, supporting the sociocultural theory.

In a similar line of thought, *objectification theory* proposes that living in a society in which women are viewed and evaluated based predominantly on their appearance can encourage girls and women to engage in self-objectification (Lindberg, Hyde, & McKinley, 2006). In turn, self-objectification can foster a negative body image. Put differently, the internalization of a body-focused view of the female body results in experiencing objectified body consciousness, which entails the constant assessment of one's looks (so-called body surveillance) and negative emotions regarding one's body, such as being ashamed (so-called body shame; Forbes, Jobe, & Revak, 2006; Knauss, Paxton, & Alsaker, 2008). Also, Cohen and colleagues (2017) found support for the objectification theory, as their findings showed that the relationship between selfie activities and a more negative body image was moderated by self-objectification.

In light of these theories, posting selfies on social media may similarly have negative effects on body image (Holland & Tiggemann, 2016). These theories are valuable for explaining how SNS use can cause a more negative body image. However, from the *uses-and-gratifications theory* (Katz et al., 1973), another possibility should be considered, namely that specific media are selected to meet specific needs. More specifically, the uses-and-gratifications theory proposes that this process is guided by psychological factors (Katz et al., 1973). Additionally, Walther's *hyperpersonal model* (1996) underlines such selective use of media, and further explicates that the affordances and features of the Internet allow for selective self-presentation and careful identity construction. Furthermore, Fox and Vendemia (2016) specifically claimed that SNSs allow selective self-presentation through pictures. Gonzales and Hancock (2011) argued that self-presentations in the online world impact users' self-concepts in the offline world. In particular, they found that becoming self-aware by updating and viewing one's own Facebook profile enhanced rather than diminished users' self-esteem. Moreover, individuals, in general, select pictures that make them look as good as possible (Young, 2009), and people seem to post pictures on SNSs that often tend to stretch the truth a bit (Zhao, Grasmuck, & Martin, 2008). Media's current features allow users to rather easily manipulate pictures before putting them online, for example, by applying filters (e.g., Snapchat) or edit-

ing software like Photoshop. The conclusions from previous research underpin our argument, studied in the current article, that SNSs could be used to reinforce and empower oneself (cf. reasoning in Tiidenberg, 2014; Tiidenberg & Cruz, 2015).

In applying the above reasoning to the selfie theme, we aimed to test the possibility that women who have a negative body image and higher levels of self-objectification could be *more motivated* to use SNSs and engage in selfie behaviors. Put differently, individuals may receive encouragement via SNSs by means of positive feedback on presenting desired identities through selfies (Barry, Doucette, Loflin, Rivera-Hudson, & Herrington, 2017). Then, using SNSs for posting selfies might offer options for self-enhancement that fit individuals' psychological states and motives. For example, for a woman with a negative body image, this psychological factor of body image may guide specific media use in terms of taking, editing, and sharing selfies on her *Facebook* page being motivated by the hope of receiving positive appearance-related feedback (motivation; also cf. Bij de Vaate, Veldhuis, Alleva, Konijn, & Van Hugten, 2018). Similarly, the psychological factor of experiencing greater self-objectification could motivate a woman to monitor her appearance by engaging in specific media use such as taking selfies, and sharing these selfies could endorse that she is doing well with regard to emulating the beauty ideal (Fredrickson & Roberts, 1997; Moradi & Huang, 2008). In all, such reasoning positions a negative body image and increased self-objectification as a motivation for engagement in selfie behaviors, rather than selfie behaviors as antecedents to a negative body image and increased self-objectification.

Hence, given the appearance-focused nature of selfies and the possibilities of SNSs to get immediate feedback that could be motivational and encouraging in nature, we hypothesized a reversed process than is studied thus far. That is, we propose that a negative body image (i.e., relatively higher levels of body *dis*satisfaction and lower levels of body appreciation), higher levels of self-objectification, and lower self-esteem would enhance greater engagement in various selfie behaviors. Thus, in the present study, we investigated whether SNS use can be a solution to fit an individual's psychological state and motives, rather than or in addition to

being an antecedent to negative body image and self-objectification.

A second contribution of the current study is exploring the relationship between *self-esteem* and various selfie behaviors. Self-esteem is generally defined as the way individuals feel about themselves, and as individuals' attitude toward themselves in total (Brown & Marshall, 2006; Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). Hence, it is conceptualized as a more general measure, indicating an important aspect of well-being than the previously described body-centered concepts (i.e., satisfaction with one's body, appreciation of one's body, and self-objectification).

Research has shown that self-esteem is related to body image (Cash & Fleming, 2002) and self-objectification (Moradi & Huang, 2008), and bolstering self-esteem has been identified as a key motivator for selecting specific forms of media (Valkenburg, Peter, & Walther, 2016). Moreover, young adult women indicated posting selfies as a motive to push forward a positive self and therewith increase self-esteem (Pounders, Kowalczyk, & Stowers, 2016). Such a finding underpins our assumption that selfie behavior could be portrayed to empower and reinforce oneself (Tiidenberg, 2014; Tiidenberg & Cruz, 2015). Thus, following theorizing along the lines of the uses-and-gratifications theory (Katz et al., 1973), lower self-esteem (i.e., a psychological factor) could encourage one to take selfies that align with a desired identity (i.e., specific media use), in the hopes of receiving encouragement via SNSs (i.e., motivation; Barry et al., 2017). The current study therefore investigated whether lower self-esteem would precede a stronger tendency to engage in selfie behaviors.

Lastly, the current study contributes to the present literature by investigating selfie behavior in terms of its various aspects, including preoccupation, selection, editing, and deliberate posting (rather than the commonly studied overall SNS use alone; Bij de Vaate et al., 2018). Namely, prior to selfie-making, individuals are, to a certain degree, preoccupied or involved with selfies, for example, by looking at or commenting on selfies of friends on Facebook. After taking selfies, individuals consciously select the one they would like to post online (Siibak, 2009). Subsequently, many editing techniques can be used (e.g., filters; Fox & Rooney, 2015).

Finally, the (edited) selfie can be deliberately posted online. As this sequence demonstrates, various selfie-related behaviors can each contribute to eventual selfie curation and deliberate selfie posting. Because selfie taking and sharing alone do not comprise the efforts and thoughts that have been put into curating their online self-presentation, it is important to also investigate behaviors preceding deliberate selfie posting.

Overview of the Current Study

In sum, this study investigated the relationships between body image, self-objectification, self-esteem, and various selfie behaviors, and contributes to the current body of literature in three ways: (a) Research on SNSs and body image has proposed that engaging in SNSs (including taking and sharing selfies) can lead to a more negative body image and higher self-objectification; however, based on theorizing that media are selected to meet specific needs, this study investigated whether women who have a more negative body image and higher levels of self-objectification are more motivated to use SNSs and engage in selfie behaviors; (b) this study examined the relationship between self-esteem and the various selfie behaviors; and lastly (c), this study investigated selfie behavior in terms of its various aspects, including preoccupation, selection, editing, and deliberate posting.

More specifically, in line with the uses-and-gratifications theory (Katz et al., 1973) and the hyperpersonal model (Walther, 1996), we hypothesized that a worsened body image (i.e., higher levels of body dissatisfaction, Hypothesis 1a, and lower levels of body appreciation, Hypothesis 1b), higher levels of self-objectification (Hypothesis 2), and lower self-esteem (Hypothesis 3) would precede higher engagement in the various selfie behaviors (see Figure 1 for a schematic representation).

Our target group comprised women between 18 and 25 years old. This age-group is considered as the developmental stage of emerging adulthood (Arnett, 2000; Nelson, Story, Larson, Neumark-Sztainer, & Lytle, 2008), and it forms an ideal age-group for studying the proposed relationships for the following three reasons. First, emerging adults are among the largest consumers of SNSs (Pew Research Center, 2017). Second, young women are among the most frequent producers of selfies (Sorokowska et al., 2016). Third, young women are also most prone to experiencing body concerns and self-objectification (Fredrickson & Roberts, 1997).

Method

Participants

Participants were 179 young females ($M_{age} =$ 21.54, $SD_{age} = 2.05$) who were selected from an initial sample of 252 women who responded to our online survey. Respondents who did not meet our inclusion criteria were discarded. Our inclusion criteria were as follows: (a) aged 18 to 25 years old (i.e., in the developmental stage of
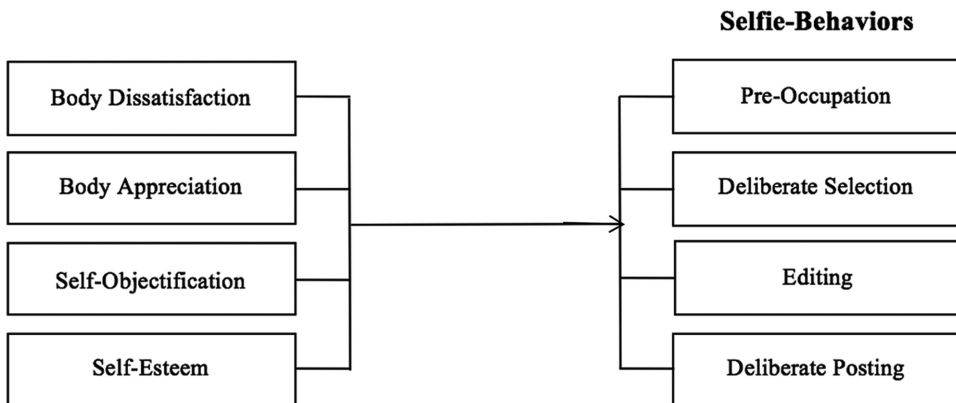
Selfie-Behaviors

Figure 1. Proposed model for body dissatisfaction, body appreciation, self-objectification, and self-esteem affecting selfie behaviors in young women.

emerging adulthood; Arnett, 2000; Nelson et al., 2008); (b) reported taking selfies ("Do you ever take selfies?"; *yes/no*); and (c) completed the entire survey. Participants completed higher education (69.8%), middle education (23.5%), and lower education (6.7%). Participants' body mass indices were normally distributed ($M = 21.95$, $SD = 2.73$; range 16–32; calculated by dividing one's self-reported weight in kilos by squared self-reported height in meters).

Procedure

The survey was distributed online through snowball sampling via connections and several group pages on Facebook (i.e., being classified as the most popular SNS; Pew Research Center, 2017), as well as on the group page of a higher educational institution. Recruitment also occurred face-to-face and via leaflets on campuses of higher educational institutions. In all cases, participants were referred to the online questionnaire. The first page of the survey informed participants generally about the study topic (i.e., profiling selfie behavior), compensation, and inclusion criteria. After completing an electronic informed consent sheet, participants completed measures concerning demographics (i.e., age, weight, height, educational level), and daily Internet and SNS use. Subsequently, they completed measures concerning selfie behaviors, body image, self-objectification, and self-esteem. Lastly, participants were debriefed upon completion and rewarded with research credit or a chance to win a gift voucher.

Measures

For scale uniformity, all scales (except for the Internet and SNS use) that are subsequently addressed in more detail, were 5-point Likert-type scales (e.g., 1 = *totally disagree* to 5 = *totally agree*; 1 = *never* to 5 = *very often*). Scores were calculated as mean indices.

Selfie measures. The following measures were composed by adapting measures from related areas such as Facebook use, adjusted to fit the selfie behaviors (also cf. Bij de Vaate et al., 2018).

Preoccupation with selfies. The Photo Subscale (Meier & Gray, 2014; original $\alpha = .82$) was adjusted to target selfies (e.g., "I often share selfies"). For this study, we adapted the original eight items to fit selfie-related activities and

added an extra item on sharing selfies. Higher scores reflect higher engagement in online activities indicative of preoccupation with selfies (nine items; current $\alpha = .74$).

Deliberate selfie selection. The Photo-Selection Scale (Siibak, 2009) was adjusted to assess reasons why participants selected selfies before posting them on SNSs ("How often do you select a selfie for that particular reason," e.g., "Because friends and family are in the selfie"). Higher scores indicate more deliberate and planned consideration of specific reasons for selfie selection before online posting (15 items; $\alpha = .88$).

Editing of selfies. Three items (Fox & Rooney, 2015; original $\alpha = .88$) were administered that are indicative of how often participants apply photo-editing techniques to improve their appearance before posting selfies online ("How often do you apply the following techniques before posting a selfie on social media," e.g., using filters, cropping, and applying Photoshop or other editing software). Higher scores indicate larger use of photo-editing techniques (current $\alpha = .63$).

Deliberate selfie posting. Deliberate selfie posting was assessed by four items measuring the extent to which participants plan posting selfies for specific reasons (e.g., "Sometimes I postpone posting my selfie, so more people can like my selfie"). Higher scores indicated higher levels of deliberate selfie posting ($\alpha = .96$).

Body image measures. In line with recent research showing that negative and positive body images are distinct (Tylka & Wood-Barcalow, 2015), we chose one measure to assess aspects of a negative body image (body dissatisfaction) and one measure to assess aspects of a positive body image (body appreciation).

Body dissatisfaction. Based on the Body Dissatisfaction Subscale of the Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983; original $\alpha = .89$), the measurement for body dissatisfaction comprised nine items (e.g., "I think my hips are too big; cf. Veldhuis, Konijn, & Seidell, 2014a). Higher scores reflect higher levels of body dissatisfaction (current $\alpha = .89$).

Body appreciation. The Body Appreciation Scale-2 (Alleva, Martijn, Veldhuis, & Tylka, 2016; Tylka & Wood-Barcalow, 2015) comprises 10 items (e.g., "I respect my body"). The Body Appreciation Scale-2 has shown to be

reliable (previous internal consistency estimates: 0.96–0.97) and unidimensional across sex and type of sample (Andrew, Tiggemann, & Clark, 2015; Tylka & Wood-Barcalow, 2015). Higher scores demonstrate higher levels of body appreciation (current α = .92).

Self-objectification. Self-objectification was evaluated with four items (e.g., "I often think about how I look") from the Body Surveillance Subscale of the Objectified Body Consciousness Scale for Preadolescent and Adolescent Youth (previous internal consistency estimates vary between 0.79 and 0.89 across sex and different samples; based on Lindberg, Hyde, & McKinley, 2006; cf. Veldhuis et al., 2014a). Higher scores indicate higher levels of self-objectification (current α = .81).

Self-esteem. The Rosenberg Self-Esteem Scale (Rosenberg, 1965; original internal consistency: 0.77) comprises 10 items (e.g., "I feel that I have a number of good qualities") that assess trait self-esteem. Higher scores indicate higher self-esteem (current α = .83).

Internet and SNS use. For additional insights on selfie-maker's Internet and SNS behavior, we assessed *daily Internet access* (e.g., at home, at school, or at work; *yes/no*) and *daily amount of Internet use* (Meier & Gray, 2014). For the latter, the answering options were based on the national mean of daily Internet use for ages 18–24 years being 3.3 hr per day (for answer categories, see Table 1; Bij de Vaate et al., 2018). Use of *specific SNSs* was measured by having a social media account (*yes/no*) and daily amount of time spent on Facebook, Twitter, Instagram, Pinterest, and Tumblr (for answer categories, see Table 1; Bij de Vaate et al., 2018).

Results

Descriptions and Correlations

Approximately half of the participants (*n* = 89) spent more than 3 hr daily on the Internet, and Facebook was the most popular SNS (99.4% owned a Facebook account and 40% spent 30–60 min on Facebook per day; see Table 1 for all details). On average, participants posted one to two selfies each week (*M* = 1.56, *SD* = 3.4; range 0–30). The confirmatory factor loadings of the items related to the four independent (i.e., body dissatisfaction, body appreciation, self-objectification, self-esteem) and the four dependent (i.e., the four selfie behaviors) latent variables all have *p* values less than 0.01 (see Table A1 in the Appendix). Bivariate correlations are presented in Table 2.

Importantly, for the following analyses, several models were tested, with body image as one latent variable comprising body dissatisfaction and body appreciation, and with body appreciation and dissatisfaction separated. The models with a distinction between body dissatisfaction and body appreciation explained selfie behaviors better (higher goodness of fit), supporting research on their distinctiveness (Tylka & Wood-Barcalow, 2015). These models are thus reported.

Testing Hypotheses

We used structural equation modeling; in Mplus (Version 6.10), maximum likelihood estimation was used to measure the eight latent variables and their proposed relations. Our model assumes that body image (body dissatis-

Table 1
Descriptive Results for Internet Use and Specific Social Networking Sites (SNSs) Use

Daily Internet use		Daily SNSs use					
Categories	%	Categories	Facebook (%)	Instagram (%)	Twitter (%)	Pinterest (%)	Tumblr (%)
(Almost) never	—	(Almost) never	0.6	16.8	55.3	52.5	59.2%
<1 hr a day	2.8	<½ hr a day	10.1	21.8	10.1	12.8	4.5
1–2 hr a day	24.0	½–1 hr a day	40.2	22.9	2.8	5.6	0.6
2–3 hr a day	23.5	1–2 hr a day	24.0	17.3	2.2	2.2	0.6
3–4 hr a day	23.5	2–3 hr a day	12.8	5.0	0.6	0.0	0.6
>4 hr a day	26.3	>3 hr a day	11.7	2.2	0.6	0.0	0.0
	—	Not applicable	0.6	14.0	28.5	26.8	34.6

Note. Internet usage for female selfie-makers (*N* = 179) in percentages.

Table 2
Correlations of Independent and Dependent Variables, Latent Variables Within Model

	Self-image				Selfie behaviors			
Variables	Body dissatisfaction	Body appreciation	Self-objectification	Self-esteem	Preoccupation	Selection	Editing	Posting
Self-image								
Body dissatisfaction	—	−.650**	.349**	−.462**	−.055	−.039	.068	.108
Body appreciation		—	−.391**	.929**	.130	.165*	.055	.007
Self-objectification			—	−.431**	.109	.159*	.200**	.240**
Self-esteem				—	.118	.056	.002	−.077
Selfie behaviours								
Preoccupation					—	.362**	.377**	.390**
Selection						—	.252**	.240**
Editing							—	.386**
Posting								—

* $p < .05$.   ** $p < .01$.

faction and body appreciation), self-objectification, and self-esteem affect selfie behaviors. As aforementioned, prior research has positioned SNS use as an antecedent, instead. Therefore, we also tested a reversed model, with selfie behaviors affecting body image, self-objectification, and self-esteem. The estimation of the proposed model showed a fairly good fit (Chen, 2007): confirmatory factor analysis (CFI) = 0.871; root mean square error of approximation (RMSEA) = 0.049 (90% confidence interval [CI; 0.045, 0.053]); $\chi^2(1879) = 2691.049$, $p < .05$. Table 3 shows the standardized effects (βs) within the model.[1] The reversed model showed only slightly poorer fit measures: CFI = 0.752; RMSEA = 0.066 (90% CI [0.062, 0.069]); $\chi^2(1879) = 3507.265$, $p < .05$, but resulted in much poorer standardized effects (Table 4).

Not supporting Hypotheses 1a and 3, the findings indicate that neither higher levels of body dissatisfaction nor lower levels of self-esteem were associated with higher engagement in selfie behaviors (Table 3). In contrast to Hypothesis 1b, higher levels of body *appreciation* are significantly related to *higher* intensities of selfie selection and deliberate selfie posting. Concerning Hypothesis 2, the results fully support our hypothesis that self-objectification is significantly and positively associated with all aspects of selfie behavior.

Discussion

This study investigated the relations between body image, self-objectification, self-esteem,

and selfie behaviors. We hypothesized that a worsened body image, higher levels of self-objectification, and lower self-esteem would be related to greater engagement in selfie behaviors. Hence, we propose a reversed process than commonly found in most studies and has thus far not received the attention it should, in our view. In addition, we not only looked at general SNS use, but also specified selfie-related activities. We based our assumptions on the uses-and-gratifications theory (Katz et al., 1973) and the hyperpersonal model (Walther, 1996), suggesting that specific media such as SNSs are selected to meet specific needs. In our study, one gets involved in selfie behaviors when experiencing a negative body image, self-objectification, or lowered self-esteem, presumably to reinforce or empower oneself. Hence, investigating the potential impact of body image, self-objectification, and self-esteem on SNS use could complement prior studies in this field, which have investigated the impact of SNS use and selfie activity on body image, self-objectification, and self-esteem (McLean et al., 2015; Meier & Gray, 2014).

Our main findings fully supported our hypothesis in testing the model in which higher levels of self-objectification preceded greater engagement in all selfie behaviors assessed.

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[1] The model with body dissatisfaction and body appreciation comprised as one latent body image variable showed the following fit: CFI = 0.717; RMSEA = 0.070 (90% CI [0.067, 0.073]); $\chi^2(1930) = 3738.416$, $p < 0.05$.

Table 3
Proposed Model: Standardized Effects (β) of Self-Image Measures on the Selfie Behavior Measures

	Selfie behavior			
Self-image	Preoccupation	Selection	Editing	Posting
Body dissatisfaction	.131	.038	.260	.143
Body appreciation	.135	.383*	.342	.361*
Self-objectification	.357**	.307**	.397**	.324**
Self-esteem	.287	−.022	.132	−.097

* $p < .05$.   ** $p < .01$.

However, opposing our proposition, body appreciation was related to *greater* (rather than reduced) intensities of selfie selection and deliberate posting. Body appreciation did not influence preoccupation with selfies or editing selfies. Unexpectedly, body dissatisfaction and self-esteem were not associated with selfie behaviors. As prior research has positioned SNS use as antecedent to body image and well-being outcomes (Holland & Tiggemann, 2016; McLean et al., 2015), we also tested the reversed model, showing poorer results, which provides further support to our proposed model.

A key finding from our study is that self-objectification is related to more partaking in all selfie behaviors. Namely, when a selfie-maker viewed herself more strongly from an outside observer's perspective (i.e., with an emphasis on her physical appearance), she was more inclined to be preoccupied with selfie-making, to deliberately select a selfie, and to edit it substantially before deliberately posting the selfie. On the one hand, such a finding can underscore the persistent and harmful nature of self-objectification: This is the case when we argue that once a woman is socialized to engage in self-objectification, it may drive engagement in appearance-focused activities, such as editing

selfies and posting these online. On the other hand, we should also consider that when people objectify and subsequently selectively present themselves by posting selfies, they may find incentives from others in the form of likes and positive feedback on their appearance (also see Barry et al., 2017; Mascheroni, Vincent, & Jimenez, 2015; Pounders et al., 2016). Therefore, self-objectification may also have a positive side, contrasting the prevalent literature (Forbes et al., 2006; Knauss et al., 2008). A reconsideration of a more dynamic interplay of various concepts seems relevant here. For example, our findings underscore the importance of investigating the typology of selfies. On the one hand, women with a more positive body image might engage in SNS use and selfie behaviors in an *adaptive way* and create selfies that celebrate the uniqueness of one's own body. On the other hand, those with higher levels of self-objectification might engage in SNS use and selfie behaviors in a *maladaptive way* and take selfies that underscore that one's body is an aesthetic object. To the best of our knowledge, these possibilities have not been investigated yet. Additionally, our participants reported to post up to 30 selfies per week, which further underpins the value of investigating the

Table 4
Reversed Model: Standardized Effects (β) of the Stages in the Selfie Process on Personal Traits

Selfie behavior	Body dissatisfaction	Body appreciation	Self-esteem	Self-objectification
Preoccupation	−.047	.023	.157	.007
Selection	−.146	.183*	.070	.053
Editing	.107	.003	−.024	.165
Posting	.063	−.044	−.144	.160

* $p < .10$.

possibilities of using selfie behavior in an adaptive or maladaptive way: This descriptive finding indicates that the amount of time spend on selfie behaviors varies widely and that engaging in selfie behaviors can be a very time-consuming activity for some people.

Next, considering our outcomes on body image, the analyses indicated that body dissatisfaction and body appreciation are not merely two opposing dimensions of body image. This outcome aligns with current research on a positive body image (Tylka & Wood-Barcalow, 2015). Specifically, body appreciation, but not body dissatisfaction, significantly contributed to the being engaged in selecting selfies and deliberate posting. Such a finding lines up with a study by Ridgway and Clayton (2016) showing that body satisfaction was positively related to posting selfies on Instagram. However, from our findings, it remains unclear why body appreciation would relate to greater engagement in these selfie behaviors. One possibility is that women with a more positive body image actually use SNSs and selfies in an adaptive way, for example, to promote the acceptance of their own body or to promote body diversity (Tylka & Wood-Barcalow, 2015; Wood-Barcalow, Tylka, & Augustus-Horvath, 2010). Indeed, in recent years, there has been an increase in the popularity of the so-called body positivity movement. The present findings align with research showing that women with a more positive body image selectively filter "in" information that can positively impact their body image, and filter "out" information that can negatively impact their body image (Tylka & Wood-Barcalow, 2015; Wood-Barcalow et al., 2010). In other words, women with a more positive body image might *deliberately* choose to engage with more positive forms of media use, for example, by creating and sharing body-positive content. Subsequent incentives by means of likes and positive reactions of others might further empower and affirm them (Barry et al., 2017; Mascheroni et al., 2015; Pounders et al., 2016; also cf. reasoning in Tiidenberg, 2014; Tiidenberg & Cruz, 2015). This possibility should be further examined in future research, for example, by assessing the specific *types* of selfies that women create and share (e.g., those emphasizing love and respect for one's body vs. those who attempt to align with societal appearance ideals; Alleva, Veldhuis, & Martijn, 2016).

It would also be valuable to interview women with a positive body image to gain an additional insight into the ways that they use SNSs and create and share selfies. Further, it will also be important to investigate whether potentially adaptive users of SNSs and selfie behaviors end up contributing to and maintaining body appreciation in the longer term.

To conclude on our findings, young women who appreciated their bodies more were also more likely to engage in selecting their selfies and deliberately posting their selfies on SNSs. In addition, women who had a stronger tendency to engage in self-objectification were also more likely to be engaged in selfie behaviors. Collectively, and taking prior research into account (Cohen et al., 2017; McLean et al., 2015; Meier & Gray, 2014), body image, self-objectification, and SNS use seem to mutually affect and reinforce one another, such that body image and self-objectification not only serve as outcomes of SNS use, but also *motivate* individuals to the specific use of SNSs (along the lines of reasoning on empowerment by Tiidenberg [2014] and Tiidenberg and Cruz [2015]).

This study yielded interesting results in other directions than commonly studied in the field of body image and presented new insights into the relatively recent phenomenon of selfie behavior. Hence, our study also had some limitations that should be considered in light of the study's implications and provides guidelines for future research. First, given our recruitment procedure, our sample turned out to be selective, being biased toward rather higher educated participants. In addition, our sample comprised women only, and was recruited from a predominantly Caucasian population. Therefore, future research should recruit more diverse samples in terms of the educational level and ethnicity, and it should also investigate the proposed relationships among men and other age-groups (Dhir, Pallesen, Torsheim, & Andreassen, 2016). Second, although our sample size was adequate for the testing of our hypotheses and yielded convincing significant results, it was a relatively small sample. A larger sample size would more easily allow segmentation along the lines of possible moderating factors. Consequently, considering these limitations, the results from this study cannot be generalized to the population of young adult women. Third, the reliability for the measurement of selfie editing can be

improved, although it was sufficient for our group-based analyses. As most of the selfie scales were newly developed and applied, future research is needed to develop more solid scales from these items.

Then, another important note is that our data are cross-sectional and therefore causality cannot be determined. Nevertheless, the analytic technique of structural equation modeling did show more support for our proposed, reversed model than for the more commonly found model. Future research can take an experimental approach to further establish the relationships between body image and selfie behaviors, and longitudinal research could provide more insights into how these relationships develop *over time*. Finally, our findings indicate the plausibility that both pathways (i.e., from body image and self-objectification to selfie behaviors, and back, from selfie behaviors to body image and self-objectification) reinforce one another, neither excluding the other entirely.

It is also important, for future studies, to open-mindedly consider that the effects from SNS use and selfie behavior not need to be only negative: For some individuals, these might be beneficial, for example, when incentives typical for SNSs can reinforce their positive self-image, or have the ability to even improve their somewhat insecure or negative self-image. Indeed, our findings concerning the relationship between body appreciation and selfie behaviors suggest that some women might use selfie behaviors in an *adaptive* way. Future research could then investigate *for whom*, and in what *contexts*, selfie behaviors can be positive and adaptive. In light of the limitations described above, it will also be important to explore these relationships among various samples, as these can be different for, for example, women with an eating disorder or other age-groups.

Moreover, future selfie studies should also pay careful attention to the high visibility of selfies to peers and others, and the affordances of current SNSs for obtaining reactions from people in one's network (e.g., by means of likes and feedback; so-called other-provided information; Chua & Chang, 2016; Gonzales & Hancock, 2011; Mascheroni et al., 2015). From here, it seems important to further investigate factors that capture peer influence in terms of beauty norms (e.g., perceived peer pressure to look as smart as possible with smooth skin,

large eyes, etcetera) and social norms regarding selfie behavior (e.g., injunctive and descriptive norms; based on reasoning in Chua & Chang, 2016; Veldhuis, Konijn, & Seidell, 2014b; Mascheroni et al., 2015).

Lastly, an important implication for practice is that concepts such as body appreciation and self-objectification (often studied as consequences of media use) may serve as motives preceding engagement in appearance-related media or may even include a reinforcing spiral, which is something that health workers and intervention developers should not overlook. In other words, it is important to not only focus on the consequences of selfie behavior, but also address mechanisms that underlie selfie behavior. Finally, if women with a positive body image use selfies in an adaptive way that creates, reinforces, and maintains their positive body image, it could be valuable to teach such skills to women with a more negative body image.

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(*Appendix follows*)

Appendix

Table A1
Factor Loadings of Latent Variables Within Model Using Confirmative Factor Analysis

Body dissatisfaction		Body appreciation		Self-esteem		Self-objectification	
I think that my stomach is too big	.628*	I respect my body	.678*	I am satisfied with myself	.756*	I often think about how I look	.554*
I think that my legs are too big	.448*	I feel good about my body	.844*	At times I think I am no good at all (R)	−.346*	I often compare how I look with how other people look	.724*
I feel satisfied with my body figure (R)	−.859*	I feel that my body has at least some good qualities	.656*	I feel that I have a number of good qualities	.526*	I often worry about how I look to other people	.840*
I think that my stomach is just the right size (R)	−.644*	I take a positive attitude toward my body	.855*	I am able to do things as well as most other people	.367*	I often think about whether the clothes I am wearing make me look good	.754*
I feel bad about how I look	.654*	I am attentive to my body's needs	.415*	I feel I do not have much to be proud of (R)	−.461*		
I feel satisfied with my body weight (R)	−.689*	I feel love for my body	.731*	I certainly feel useless at times (R)	−.541*		
I think that the shape of my body is just right (R)	−.658*	I appreciate the different and unique things about my body	.728*	I wish I could have more respect for myself (R)	−.540*		
I feel satisfied with the way I look (R)	−.875*	You can tell I feel good about my body by the way I behave	.639*	All in all, I am inclined to feel that I am a failure (R)	−.541*		
I think that my thighs are just the right size (R)	−.603*	I feel comfortable in my body	.858*	I take a positive attitude toward myself	.784*		
		I feel like I am beautiful even if I am different from pictures and videos of attractive people (e.g., models, actresses, or actors)	.828*	I feel that I'm a person of worth	.620*		
		I select a selfie, because:					

(*Appendix continues*)

Table A1 (*continued*)

Preoccupation with selfies		Deliberate selfie selection		Editing of selfies		Deliberate selfie posting	
I often upload selfies on social media	.620*	I look good in the selfie	.496*	Cropping or cutting parts of yourself out of pictures	.640*	Before I post a selfie, I think about the best time to post my selfie	.880*
I update my profile picture on social media often with a selfie	.614*	The selfie is taken in a beautiful location	.633*	Using photographic filters	.600*	Sometimes I postpone my selfie, so more people can see my selfie	.962*
I have an album on social media containing selfies	.494*	The selfie in general looks good	.559*	Using Photoshop or other picture editing software or applications	.523*	Sometimes I postpone my selfie, so more people can like my selfie	.982*
I comment on selfies from friends	.653*	My friends and family are in it	.544*			Sometimes I postpone my selfie, so more people can comment on my selfie	.871*
I tag myself in group-selfies from friends	.411*	It commemorates an important moment in my life	.687*				
I untag myself in group-selfies from friends	.371*	It reflects my personality	.623*				
I look at selfies from friends	.367*	The selfie is well-edited	.376*				
I look at group-selfies from friends where I'm in	.300*	Important objects are in the selfie	.615*				

(*Appendix continues*)

Table A1 (*continued*)

Preoccupation with selfies		Deliberate selfie selection		Editing of selfies	Deliberate selfie posting
I often share selfies	.567*	Interesting activities are shown in the selfie	.607*		
		It describes my lifestyle	.630*		
		My clothing style is trendy	.488*		
		It expresses what kind of clothing-style I like	.504*		
		It is taken in a famous place	.621*		
		It displays my brand preferences	.410*		
		I look sexy in the selfie	.486*		

Note. (R) indicates counterindicative items (recoded items).
* $p < .01$.