



## The impact of social media use on appearance self-esteem from childhood to adolescence – A 3-wave community study

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### ABSTRACT

**Background:** Social media users are extensively exposed to photographs displaying idealized self-presentations. This poses a potential threat to youth's appearance self-esteem, but the negative impact may depend upon types of social media engagement. Youth who actively post updates (i.e., self-oriented social media use) may position themselves to receive positive feedback and appearance confirmation and thus show enhanced self-esteem, whereas youths who mostly view and respond to other's posts (i.e. other-oriented social media use) are exposed to these idealized presentations, while not receiving positive feedback on their own appearance, which may result in reduced self-esteem.

**Methods:** Children were interviewed about their social media use at ages 10, 12 and 14 years (n = 725). Appearance self-esteem was captured by the Self Description Questionnaire I and the Self-Perception Profile for Adolescents.

**Results:** Applying a Random Intercept Cross-lagged Panel Model, we found that increased other-oriented social media use predicted decreased appearance self-esteem from ages 10 to 12 and ages 12 to 14, but only in girls. Self-oriented social media use did not impact appearance self-esteem, and no reverse influence from appearance self-esteem to social media use was revealed.

**Conclusions:** Findings suggest that other-oriented, but not self-oriented use, negatively affects appearance self-esteem from childhood to adolescence.

### 1. Introduction

Nearly all teens (94%) in developed countries use social media platforms, such as Instagram, Snapchat, and Facebook (NORC Center for Public Affairs Research, 2017), and many post “selfies” (Anderson & Jiang, 2018). Children and adolescents' social media use is dominated by visual communication, including posting and commenting on photographs and videos of themselves or others (Nesi, Choukas-Bradley, & Prinstein, 2018). Research across the past several decades has suggested that self-perceived physical appearance is the single sub-domain of the self that contributes the most to adolescents' global self-esteem – particularly among girls (Harter, 2012; von Soest, Wichstrom, &

Kvalem, 2016; Wichstrom & von Soest, 2016). As adolescents increasingly rely on social media photographs and videos as core means of self-presentation (Chua & Chang, 2016; Mascheroni, Vincent, & Jimenez, 2015), the importance of physical appearance to the self may be even further heightened. Moreover, others' appearance on social media is often ideal or selectively portrayed to maximize attractive self-presentations (Mascheroni et al., 2015; Yau & Reich, 2019). Over time, this social media environment may create appearance norms that are difficult to obtain (Chua & Chang, 2016; McLean, Jarman, & Rodgers, 2019), and of which most children and adolescents will fall short – creating a gap between the perceived and ideal physical self. Self-discrepancy theory (Higgins, 1987) suggests that such gap between

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perceived and ideal self may result in negative emotions (e.g., sadness, disappointment) and poorer self-esteem.

Reviewing the literature on social media use and self-esteem, Krause, Baum, Baumann, and Krasnova (2019) concluded that because many studies do not specify the activities social media users engage in, results are mixed, with some studies reporting a positive association between social media use and self-esteem, some showing negative associations and others finding no relationship at all. The current study will therefore examine whether self-oriented social media use, i.e., posting updates and photos on one's own page, versus other-oriented social media activities, i.e. liking/commenting on others's posts are prospectively associated with appearance self-esteem across four years. Gender differences in these effects will also be tested.

### 1.1. Self-oriented versus other-oriented social media use

Research taking an activity-passivity perspective on social media use (Frison & Eggermont, 2017; Rousseau, Eggermont, & Frison, 2017) finds that passive use—simply monitoring others' posts—correlates with depression and lower well-being (Frison & Eggermont, 2017; Verduyn, Ybarra, Resibois, Jonides, & Kross, 2017), whereas active use, including posting and interacting with other users, correlates with better well-being and lower levels of depression (Thorisdottir, Sigurvinsdottir, Asgeirsdottir, Allegrante, & Sigfusdottir, 2019). However, there may be a variety of different behaviors that make up "active use," including posting one's own content, sharing others' content, and liking and commenting on others' posts (Escobar-Viera et al., 2018). Thus, we further refine this distinction by offering two specific dimensions of "active" use: *self-oriented* and *other-oriented* use. We propose that self-oriented use consists of original posts, updates, and photos, whereas other-oriented use comprises merely liking or commenting on others' posts and pictures. Drawing on self-presentation and social comparison perspectives (Festinger, 1954), we argue that this distinction will have important implications for appearance self-esteem among youth.

Self-oriented media use may boost appearance self-esteem (Burrow & Rainone, 2017; Valkenburg, Koutamanis, & Vossen, 2017) for at least two reasons: Online self-presentations often are "best versions" of oneself, and when youth express these idealized versions, it may become integrated in the way they view themselves (Gonzales & Hancock, 2008). Second, when adolescents post their own content, the vast majority receive positive feedback online (potentially boosting self-esteem), with negative feedback being rare (Valkenburg, Peter, & Schouten, 2006). On the other hand, youth who often engage in other-oriented social media behavior will frequently be viewing and evaluating others' ideal self-presentations. This may lead them to engage in upward social comparisons, which can negatively impact self-esteem. A recent review provides initial support for the above line of reasoning; using social media sites for self-presentation (i.e., self-oriented use) is positively associated with self-esteem, whereas decreases in self-esteem are seen when social media is used for comparison (i.e., other-oriented use) (Krause et al., 2019). Additional support stems from experimental research, showing that browsing others' profiles negatively impacts self-esteem, whereas browsing one's own profile does not (Gonzales & Hancock, 2011).

### 1.2. Gender-specific effects

Appearance self-esteem seems to be more important to adolescent girls' than to boys' global self-esteem (Wichstrom & von Soest, 2016), and prior work suggests that girls internalize media-promoted body ideals (e.g., thin-ideals) to a greater extent than boys (Knauss, Paxton, & Alsaker, 2007). It is therefore viable that social media use will more strongly affect girls' than boys' appearance self-esteem. Existing research has primarily examined the effect of social media use on appearance satisfaction in female samples (Tiggemann & Slater, 2017), and among studies that have included both genders findings are mixed

regarding potential gender differences (de Vries, Peter, de Graaf, & Nikken, 2016; Myers & Crowther, 2009; Rousseau et al., 2017). We therefore examine gender differences but do not offer specific hypotheses regarding the direction of such effects.

### 1.3. Social media use and appearance self-esteem – a reciprocal relation?

As outlined above, social media use will likely affect appearance self-esteem, but an opposite direction of influence is also viable. Some adolescents, depending on pre-existing levels of appearance self-esteem, may be more likely to engage in self- or other-oriented social media behaviors. For example, youth with high self-esteem are less negatively affected by feedback on social media (Martinez-Pecino & Garcia-Gavilan, 2019), and may therefore more often engage in self-oriented social media behaviors. Those low in appearance-esteem, on the other hand, may fear confirmation of negative self-beliefs if they post and face rejection in the form of absence of many "likes". In support of an assumed path from appearance self-esteem to social media use Valkenburg and colleagues reported social self-esteem to predict more social media use in youth (2017). However, to our knowledge the potential effect of appearance self-esteem or related constructs on social media use has not been examined prospectively.

### 1.4. The current study

In sum, we propose a novel distinction between two types of active social media use: self-oriented and other-oriented use. We hypothesize that these behaviors will have differential impacts on youth's appearance self-esteem so that: (i) Self-oriented social media use will prospectively predict increased appearance self-esteem, (ii) other-oriented social media use will predict reduced appearance self-esteem. Regarding the opposite direction of effects, we hypothesize that: (iii) youth with increased appearance self-esteem will evince more self-oriented social media use over time, and (iv) youth experiencing lowered appearance esteem will reduce their self-oriented media use over time. We will also explore whether these prospective associations differ by gender.

## 2. Materials and methods

The Regional Committee for Medical and Health Research Ethics, Mid-Norway approved the study (approval number 2009/994).

### 2.1. Participants and procedure

All children born in 2003 and 2004 ( $N = 3456$ ) in the city of Trondheim, Norway and their parents were invited to participate in The Trondheim Early Secure Study (TESS), of which the primary aim is to examine psychosocial development and mental health over time (Steinsbekk & Wichstrom, 2018). An invitation letter and screening assessment for children's emotional and behavioral problems (The Strengths and Difficulties Questionnaire (SDQ) version 4–16) (Goodman, 1997) were sent to the children's homes. Parents brought the completed questionnaire to the community health check-up when children were 4 years old. There, they received information about the study from the health nurse, who also obtained written participant consent. Almost all children in the two cohorts attended the check-up (97.2%) and 82.2% of those who were asked to participate consented. Because the primary aim of TESS was to examine mental health concerns in youth, we oversampled for emotional and behavioral problems to increase variability and thus statistical power: Children were allocated to four strata according to their SDQ scores (cut-offs: 0–4, 5–8, 9–11, and 12–40), and the probability of selection increased with increasing SDQ scores (0.37, 0.48, 0.70, and 0.89 in the four strata, respectively). Out of 1250 families selected to participate in the study, 997 (79.8%) were interviewed and tested at age 4, and subsequent waves of assessment have taken place biennially for ten years with relatively low attrition

rates (Steinsbekk & Wichstrom, 2018). Social media use was assessed from age 10 onwards, thus the present study is based on data collected at age 10 (n = 702; *Mage* = 10.51 years, *SD* = 0.17), 12- (n = 668; *Mage* = 12.49 years, *SD* = 0.15) and 14-years (n = 628; *Mage* = 14.33 years, *SD* = 0.59). The genders were equally represented in the sample (Girls: Age 10: 52.3%; age 12: 51.9%; age 14: 53.0%), the majority were of Western origin (92.1% of the biological mothers; i.e. Western Europe, USA, Canada, Australia, New Zealand). Other origins comprised the remaining 7.9% (e.g. African, Asian). Parent’s level of education was comparable to the Norwegian population (Statistics Norway, 2012).

2.2. Measures

2.2.1. Social media use

Was assessed by interviews. Interviewers were trained personnel with at least a bachelor’s degree in a relevant field and substantial experience working with youth. Participants were asked to report which social media platforms they use (e.g., Facebook, Instagram, Snapchat, Twitter), as well as characteristics of their use. *Self-oriented social media* use was captured by: a) the number of times per month they post something on their own social media sites and b) how often they post photographs (Response categories: Never/Rarely/Weekly/Daily). *Other-oriented social media* use was assessed by questions about how often they commented on others’ status updates and photographs and how often they “like” others’ statuses (both questions rated along a 6-point Likert scale from “Several times a day” to “Rarer/Never”). Higher scores indicate higher frequency of self- or other-oriented social media use.

2.2.2. Physical appearance self-esteem

Was measured by the physical appearance subscale of the Self Description Questionnaire (SDQ-I) (Marsh, 1990) at age 10 (8 items, rated along a 5 point Likert scale, e.g. “I am happy with the way I look”;  $\alpha = 0.88$ ), whereas the corresponding subscale of the Revised Self-Perception Profile for Adolescents (SPPA-R) (Harter, 1988; Wichstrøm, 1995) was applied at ages 12 and 14 (5 items, rated along a 5 point Likert scale, e.g. “I am not happy with the way I look”,  $\alpha = 0.82$ ). Both the SDQ-I and the SPPA-R have shown good psychometric properties (Harter, 1988; Marsh & MacDonald Holmes, 1990; Wichstrøm, 1995). The shift in instrumentation was due to the need for a more developmentally appropriate measure. To examine whether the two questionnaires captured the same construct (i.e., construct validity) both measures were applied at age 12 and the disattenuated correlation (Muchinsky, 1996) between the two physical appearance subscales was  $r = 0.89$  ( $p \leq .001$ ).

2.3. Statistical analyses

Because the sample was stratified at screening, to arrive at correct population estimates, analyses were weighted with a factor corresponding to the number of youths in the population divided by the number of youths in the stratum. Missing data were handled according to a full information maximum likelihood procedure which implies that analyses are performed on all available data, provided that the cases have values for the dependent variables (analysis sample: n = 725).

First, we fitted a traditional auto-regressive cross-lagged model within a structural equation framework, using Mplus 7.4 (Muthén & Muthén, 1998-2017). This model consists of cross-lagged and autoregressive paths between observed variables of self- and other oriented social media use as well as appearance self-esteem across three time points, including correlations between residuals at all time points.

The hypothesized effects of social media use on appearance self-esteem are stipulated to take place at the within-person level; changes in a person’s own social media use at a given time point are expected to predict changes in that same person’s self-esteem. This necessitates the disentangling of within-from between-person effects. For example, other-oriented social media users may be more likely to display low

appearance self-esteem compared to other youths (i.e., between-person effects) for a variety of reasons, including common genes, personality, stable parenting or neighbourhood effects. Estimates derived from traditional covariate approaches do not separate within and between person effects. Critically, such prospective effects, which mix between- and within-person information, may deviate substantially from pure within-person effects (Berry & Willoughby, 2017). We thus test these propositions using a random intercept cross-lagged panel model (RI-CLPM) (Hamaker, Kuiper, & Grasman, 2015; Orth, Clark, Donnellan, & Robins, 2020), which makes it possible to separate the within-person level from confounding group-level associations, including all stable, between-person unmeasured covariates (i.e., individual differences). RI-CLPM extends the auto-regressive cross-lagged model by splitting variance into a stable *between-person* component (represented by two latent random intercepts loading on social media use and appearance self-esteem, respectively, across all time-points) and a *within-person* component (captured by a latent factor at each wave), which represents changes from one’s own mean level during the observational period (e.g., appearance self-esteem) as a function of changes in one’s own levels of the other variable (e.g., social media use) and the autoregressive effect (e.g. appearance self-esteem) from the previous assessment point.

Whether the RI-CLPM fitted the data better than a traditional cross-lagged model was examined by the Sattora-Bentler scaled  $\chi^2$  test. The same test was also used to assess gender moderation in a multigroup comparison.

3. Results

3.1. Preliminary findings

Table 1 displays which social media sites the participants reported to use (see Table 1).

As can be seen, Instagram and Snapchat were the most frequently used sites. More than 40% of the participants used these sites at the age of 10, a number that was roughly doubled by the age of 14 years. Descriptives of other study variables are presented in Table 2. Average levels of appearance self-esteem significantly decreased over time (age 10–12:  $p < .001$ ; age 12–14:  $p < .001$ ) (Table 2). Self-oriented social media use increased from age 10 to 12 ( $p = .005$ ), and then remained stable from age 12 to 14 ( $p = .087$ ). Other-oriented social media use increased at each time point (age 10 to 12:  $p < .001$ ; 12 to 14:  $p < .001$ ). Girls had significantly lower appearance self-esteem than boys at age 14 ( $p < .001$ ), but no gender differences were revealed at ages 10 and 12. At each time point, girls displayed more other-oriented social media behavior than boys (age 10:  $p = .003$ ; 12:  $p < .001$ ; 14:  $p < .001$ ).

The full cross-lagged autoregressive model fit the data well,  $\chi^2(8) = 8.98$ ,  $p = .34$ ,  $RMSEA < 0.001$ ,  $SRMR = 0.02$ ,  $CFI = 0.99$ ,  $TLI = 0.99$  (Fig. 1). Participants with more frequent other-oriented social media use at ages 10 and 12 than others, reported lower levels of appearance self-esteem than others two years later ( $\beta = -0.11$ ,  $p = .02$  and  $\beta = -0.14$ ,  $p < .001$ , respectively). The impact of other-oriented social media use on appearance self-esteem was higher than the impact of self-oriented social media use (10–12 years:  $\Delta\chi^2 = 4.05$  ( $df=1$ ),  $p = .04$ , and 12–14 years:  $\Delta\chi^2 = 11.14$  ( $df = 1$ ),  $p = .001$ , respectively), the latter being prospectively unrelated to appearance self-esteem (Fig. 1). Moreover, appearance self-esteem did not predict social media use.

Table 1  
Social media sites participants reported to use (n = 725).

Social media site	Age 10 (%)		Age 12 (%)		Age 14 (%)	
	Girls	Boys	Girls	Boys	Girls	Boys
Facebook	3.7	2.4	12.9	18.0	93.2	95.7
Twitter	0.6	2.0	3.9	7.8	13.0	22.2
Instagram	42.7	42.5	83.2	65.4	69.3	72.5
Snaphcat	43.3	34.3	86.6	74.8	83.7	86.3

**Table 2**  
Means, standard deviations, and bivariate correlations between all study variables.

	M	SD	1	2	3	4	5	6	7	8	9	10
1. Gender	–	–	–									
2. Self-oriented social media use, age 10	10.33	26.15	.08*	–								
3. Other-oriented social media use, age 10	4.37	3.06	.15**	.42**	–							
4. Appearance self-esteem, age 10	4.11	0.10	-.04	.06	.06	–						
5. Self-oriented social media use, age 12	17.95	30.60	.05	.12**	.02	-.02	–					
6. Other-oriented social media use, age 12	6.38	2.54	.35**	.18**	.35**	.01	.17**	–				
7. Appearance self-esteem, age 12	3.39	0.53	-.07	.02	-.08*	.31**	-.03	-.09*	–			
8. Self-oriented social media use, age 14	15.02	30.19	.06	.03	-.06*	-.02	.22**	.14*	.01	–		
9. Other-oriented social media use, age 14	8.20	3.10	.28**	.13*	.28**	.05	.15**	.49**	-.07	.27**	–	
10. Appearance self-esteem, age 14	3.06	0.69	-.27**	.03	-.05	-.02	-.09	-.19**	.42**	-.17**	-.07	–

Note: \*p < .05, \*\*p < .01.

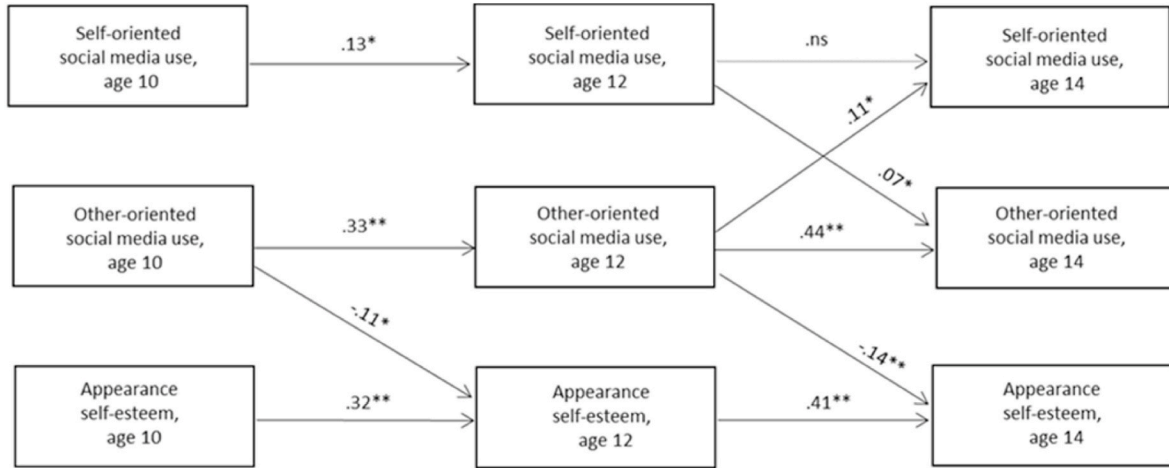


Fig. 1. Cross-lagged model from structural equation modeling (non-significant paths and cross-sectional correlations are omitted).

3.2. Within-person changes in appearance self-esteem and social media use

To disentangle whether the above associations between other-oriented social media use and later appearance self-esteem were driven by individual, within-person developmental processes, or by between-person differences, we fitted a RI-CLPM which displayed good model fit ( $\chi^2(1) = 0.65, p = .42, RMSEA < 0.001, SRMR = 0.007, CFI =$

0.99, TLI = 0.99) and better fit than the traditional CLPM ( $\Delta\chi^2 = 19.66 (df = 3), p < .001$ ) (Fig. 2). At the between-person level (i.e., random intercept), other-oriented social media use and appearance self-esteem were not correlated. At the within-person level, however, increased other-oriented social media use at age 10 and 12 predicted decreased appearance self-esteem two years later (Age 10–12:  $p = .03$ ; Age 12–14:  $p < .001$ ).

A multigroup model was constructed to test for gender differences

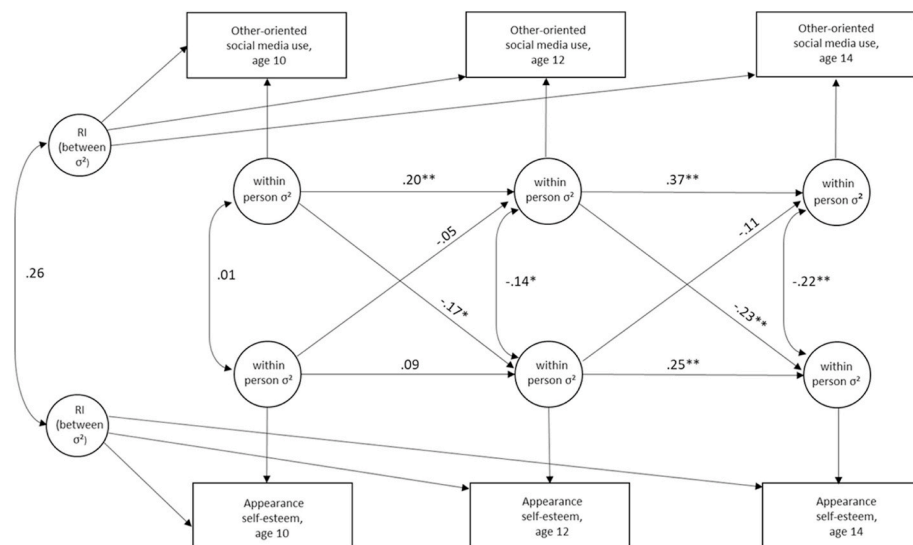


Fig. 2. Random intercept model from structural equation modeling (non-significant paths and cross-sectional correlations are omitted).

( $\chi^2$  (df = 2) = 1.51,  $p = .47$ , RMSEA < 0.001, SRMR = 0.01, CFI = 0.99, TLI = 0.99). The effect of change in other-oriented social media use on change in appearance self-esteem was strong among girls ( $\beta = -0.31$ ,  $p < .001$ ), but absent among boys ( $\beta = 0.05$ ,  $p = .64$ ); a significant gender-specific effect ( $\Delta\chi^2 = 9.52$  (df = 1),  $p = .002$ ), which was also observed in the 12–14 years span (girls:  $\beta = -0.22$ ,  $p = .004$ , boys:  $\beta = -0.01$ ,  $p = .96$ ;  $\Delta\chi^2 = 4.06$  (df = 1),  $p = .04$ ).

Although self-oriented social media use had no main effect on appearance self-esteem, whereas other-oriented media use did, one may speculate that self-oriented use might buffer the negative effects of other-oriented use. However, the interaction term between the two types of social media use had no additional effect on appearance self-esteem (Age 10–12:  $\beta = -0.04$ ,  $p = .42$ ; Age 12–14:  $\beta = 0.01$ ,  $p = .93$ ).

#### 4. Discussion

Following a community sample from childhood to adolescence, the present inquiry revealed that increased *other-oriented* social media use forecasted decreased appearance self-esteem from age 10–12 years and from age 12–14 years, whereas *self-oriented* social media use had no effect. Furthermore, results revealed important gender differences: the impact of other-oriented social media use on appearance self-esteem was strong in girls but absent in boys. Appearance self-esteem did not prospectively predict social media use; thus, no reciprocal relation was detected. Research on adolescent social media use has often been hindered by relying on cross-sectional investigations, using simple measures of overall frequency of use (Krause et al., 2019), and applying statistical methods that confound between and within-person effects. The current study adds critical insights to this literature by disentangling the effects of specific types of social media use (other-versus self-oriented) over the course of a sensitive transition period (ages 10–14), using a novel analytic technique that adjusts for all unmeasured time-invariant confounding variables.

##### 4.1. Other-oriented social media use negatively impacts appearance self-esteem

As hypothesized, engaging with others' social media updates and photographs, which often portray ideal self-presentations (Mascheroni et al., 2015; Yau & Reich, 2019), predicted decreased appearance self-esteem in the transition from childhood to adolescence. This accords with findings from a recent review reporting decreases in self-esteem when social media is used for comparison (i.e., other-oriented use, e.g., browsing other's profiles). Our findings also extend prior research (McLean et al., 2019) by suggesting that this negative impact occurs longitudinally and may detrimentally affect the development of appearance self-esteem during a vulnerable transitional phase for identity formation. Please note that the social media sites most frequently used by the participants are picture based (i.e. Instagram, Snapchat). Prior studies that have differentiated the impact of types of social media use on well-being have often considered "active" versus "passive" social media use, but for adolescents, it may be critical to further refine domains of active social media use—considering activities that are *self-oriented* (i.e., posting photos or status updates on one's own account) versus *other-oriented* (i.e., commenting and liking others' photos). This distinction may be particularly important in considering effects on appearance self-esteem, as posting one's own photos versus liking or commenting on others' photos is likely to differentially influence perceptions of one's own attractiveness, as indicated by our findings. In fact, the act of liking or commenting on peers' photos may be more similar to traditional conceptions of "passive" use, which has been shown to negatively impact self-esteem (Krause et al., 2019).

As with "passive" use, social comparisons likely play an important role in explaining why other-oriented social media use impairs appearance-esteem over time (Fardouly & Vartanian, 2015; Myers & Crowther, 2009). Social comparison theory (Festinger, 1954) states that

individuals have a tendency to compare themselves to others for self-evaluation, and this behavior peaks in adolescence (Myers & Crowther, 2009). Social media makes it easy for adolescents to engage in social comparisons, and falling short of important appearance standards forecast impaired self-esteem (Moretti & Higgins, 1990) and body dissatisfaction (Snyder, 1997). Related to self-discrepancy theory, when the "benchmark" for normal physical appearance is raised, the ideal representation of oneself may become more discrepant from one's actual perception of self (Higgins, 1987). Future studies should therefore examine social comparison, and its consequences for self-evaluation, as potential mechanisms explaining the relation between other-oriented social media use and appearance self-esteem found in the present study.

##### 4.2. Gender difference in the effect of other-oriented social media use

Other-oriented social media use predicted decreased appearance self-esteem among girls only. Notably, girls use photo-based social media platforms more often than boys (Lenhart, 2015), women are more likely than men to use social media for comparing themselves to others (Haferkamp, Eimler, Papadakis, & Kruck, 2012), and social comparison has a stronger negative effect on females' than males' body image (Myers & Crowther, 2009). Across cultures, men select mates based on physical attractiveness. This emphasis is echoed among women who put more emphasis on their own physical attractiveness than men and are more likely to promote it (Walter et al., 2020). Although both genders in our study used picture-based social media sites (Instagram, snapchat), former research indicates that females are more likely than males to post photos of themselves (Dhir, Pallesen, Torsheim, & Andreassen, 2016), thus both genders will more frequently be exposed to girls' than boys' self-presentations. Consequently, in addition to social comparisons being more detrimental to girls' than boys' appearance self-esteem, girls will more frequently be in a position of same-gender social comparison on social media. The notion that girls are particularly vulnerable to the detrimental effect of social comparisons on social media is further supported by studies suggesting that passive social media use is more strongly associated with depressive symptoms in adolescent girls compared to boys (Thorisdottir et al., 2019).

##### 4.3. Self-oriented social media is unrelated to appearance self-esteem

We hypothesized that self-oriented social media use would positively affect appearance self-esteem, but no evidence for such relation was found. Self-oriented social media use did also not buffer against the negative impact of other-oriented use, as no interaction effect between these two social media behaviors were observed. Our finding contrasts that of an experimental study of adults who reported online selective self-presentations to improve self-esteem (Gonzales & Hancock, 2011), and with cross-sectional studies showing active social media use (e.g., posting updates) to correlate with better well-being (Verduyn et al., 2017). However, a recent review revealed that although active use, which usually produces positive feedback, predicts momentary increases in self-esteem, this positive effect wears off quite quickly (Krause et al., 2019). This may explain why no associations were found in the two-year long timespan examined here.

Furthermore, in determining the impact of self-oriented social media use, it may also be important to consider the types of self-oriented posts (e.g., selfies versus status updates) and the type of feedback received. Emerging evidence suggests that, especially for young girls, posting "selfies" may be associated with poorer body esteem via increased appearance comparison, particularly when selfies are manipulated or edited (McLean et al., 2019), which has also been shown in female undergraduate students (Mills, Musto, Williams, & Tiggemann, 2018). To the extent that certain participants' self-oriented social media use involved posting and editing selfies, whereas others involved other activities (e.g., posting status updates), the potential positive impact of self-oriented social media use may have been diminished. Our original

hypothesis was based on the premise that youth who initiate postings typically receive substantial positive feedback (Valkenburg et al., 2006). This fact notwithstanding, some children and adolescent do receive little to no feedback, and some receive negative responses, both of which are associated with impaired self-esteem (Greitemeyer, Mugge, & Bollermann, 2014; Valkenburg et al., 2006). Hence, our results may not pertain to those who do not receive the usual positive reactions from others. Finally, the relation between social media use and appearance self-esteem may change during mid and late adolescence, which should be examined in future studies.

#### 4.4. Limitations

The current study adds an important contribution to the growing literature on adolescent social media use and appearance-related outcomes, offering a four-year longitudinal investigation at a critical developmental period, within a large community sample, and applying an analytical technique where causality-relevant predictions could be estimated free of confounding from time-invariant between-person effects. However, although the influence of time-invariant factors was ruled out, uncontrolled time-varying factors may still be at play (e.g., bullying affecting both social media use and appearance self-esteem), and there is of course a range of factors other than social media that impact appearance self-esteem, but exploring these was beyond the scope of the present inquiry. Further, this study introduces a novel distinction between self-oriented and other-oriented social media use; although preliminary indicators of these constructs were developed for the current study, future work should extend this approach with more thorough, empirically validated measures and examine how they relate to existing characterizations of social media behavior, such as truly “passive” (i.e., browsing) use, which was not assessed here and thus constitutes a limitation. The potential impact of different kinds of self- and other-oriented social media use (e.g. posting photos versus textual updates) should also be explored in future work. In addition, although this research offers a preliminary window into different types of social media use, potential moderators (e.g., types of posts, type of feedback received) and mediators (e.g., appearance comparison) of effects should be considered in prospective studies. For example, it is possible that self-oriented use could lead to decreases in self-esteem when negative feedback is received. Finally, social media platforms and activities continue to rapidly evolve over time. This study examined a four-year snapshot of social media activities among youth ages 10 to 14; however, it will be important for future work to consider unique uses of social media that may emerge as these technologies advance.

#### 5. Conclusions

Our study demonstrates that whether youth simply comment and “like” others’ posts versus actively “self-present” on social media differently affects appearance self-esteem. Increased other-oriented social media use reduced future appearance self-esteem in girls, whereas self-oriented use did not. Findings underscore the need for future research to examine social media use in more nuanced ways, as specific social media behaviors, rather than overall frequency of use, may differently affect well-being. Social media users, parents, professionals and policymakers should be aware that different kinds of social media use—not social media use per se—may lower or enhance children and adolescents’ self-esteem.

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#### CRedit authorship contribution statement

**Silje Steinsbekk:** Conceptualization, Project administration, Funding acquisition, Methodology, Formal analysis, Writing - original draft. **Lars Wichstrøm:** Conceptualization, Project administration, Funding acquisition, Supervision, Methodology, Writing - review & editing. **Frode Stenseng:** Conceptualization, Methodology, Visualization, Writing - review & editing. **Jacqueline Nesi:** Conceptualization, Methodology, Writing - review & editing. **Beate Wold Hygen:** Conceptualization, Methodology, Writing - review & editing. **Vera Skalická:** Conceptualization, Formal analysis, Methodology, Visualization, Writing - review & editing.

#### Declaration of competing interest

None.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chb.2020.106528>.

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