

The Impact of Social Networking Sites Use on Physical Self-esteem: The Protective Role of
Parenting Styles
Master thesis Youth Studies
Faculty of Social Sciences, Utrecht University

Student name: T. K. Zwijnenburg

Student number: 4133307

E-mail: t.k.zwijnenburg@students.uu.nl

Supervisor: R. J. J. M. Van den Eijnden

Second assessor: W. A. Van der Schuur

Date: June 15, 2020

Word count: 4.968

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Abstract

Aim: To extend the scientific knowledge on the impact of social networking sites (SNS) use on adolescent well-being. This study investigated the longitudinal relationship between SNS use and adolescent physical self-esteem. In addition, the effects of parental rule setting and parent-child quality of communication on this relationship was assessed. **Methods:** A two-wave longitudinal sample of 11- to 17- year-old adolescents (N = 1119) was utilized from the Digital Youth Project of Utrecht University. Annual measurements were administered in a classroom setting under supervision. **Results:** The use of SNS, passive or active, did not predict physical self-esteem a year later. Neither did parental rules or parent-child communication quality, or interactions between SNS use and parenting. However, the three-way interaction between active SNS use, parental rules and parent-child communication quality did predict physical self-esteem a year later. High active SNS use in combination with lower parental rules and higher parent-child quality of communication (permissive parenting style) predicted a higher physical self-esteem overall. **Conclusion:** These findings suggest that the permissive parenting style is most favorable for high frequency active users and both the authoritarian and authoritative for low frequency active users.

Keywords: Social networking sites, physical self-esteem, parental regulation, communication, adolescents, parenting styles

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Samenvatting

Doel: Het uitbreiden van de wetenschappelijk kennis met betrekking tot de impact van het gebruik van sociale netwerk sites (SNS) op het welbevinden van adolescenten. Deze studie onderzocht de longitudinale relatie tussen SNS gebruik en het fysieke zelfvertrouwen van adolescenten. Daarnaast werden de effecten van de regels van ouders en de kwaliteit van communicatie tussen ouder en kind ook getoetst. Methoden: De steekproef, afkomstig van het Digital Youth Project van de Universiteit Utrecht, bestond uit 1119 adolescenten (11 tot 17 jaar) die in 2017 en 2018 een online vragenlijst hebben ingevuld. De online vragenlijsten werden afgenomen in een klaslokaal onder toezicht. Resultaten: Het gebruik van SNS, passief of actief, voorspelde niet fysiek zelfvertrouwen een jaar later. Ook regels van ouders en kwaliteit van ouder-kind communicatie, noch de interactie tussen SNS gebruik en deze opvoedingsaspecten hadden een significant effect. Echter, de drieweg interactie tussen actief SNS gebruik, regels van ouders en kwaliteit van ouder-kind communicatie voorspelde wel fysiek zelfvertrouwen een jaar later. Intensief SNS gebruik in combinatie met minder regels van ouders en een hoge kwaliteit van communicatie tussen ouder en kind (permissieve opvoedingsstijl) voorspelde een hoger fysiek zelfvertrouwen in het algemeen. Conclusie: De bevindingen suggereren dat de permissieve opvoedingsstijl het meest gunstig is voor hoge actieve SNS gebruikers en de autoritaire en autoritatieve opvoedingsstijlen het meest gunstig voor lage actieve SNS gebruikers.

Sleutelwoorden: Sociale netwerk sites, fysiek zelfvertrouwen, regulatie van ouders, communicatie, adolescenten, opvoedingsstijlen

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Introduction

In today's society, approximately 98% of adolescents aged 12-16 years old in the Netherlands have access to a smartphone and thus to social media (DiYo, 2017). Instagram is one of the biggest social media platforms today, with 80% of the Dutch youth aged 12-16 using it (DiYo, 2017). Instagram is more image-based than other platforms, such as Facebook (Verduyn, Ybarra, Résibois, Jonides, & Kross, 2017), thereby providing more opportunities to compare oneself to others physically (Fardouly & Vartanian, 2016). People tend to present highly positive pictures and 'stories' of themselves on Instagram (Vogel & Rose, 2016), which can have a negative impact on adolescent's physical self-esteem through comparison of one's own physical appearance with these idealized images (Kleemans, Daalmans, Carbaat, & Anschutz, 2018).

In order to protect adolescents from feeling they cannot live up to these idealized images, parents may try to regulate their children's social networking sites (SNS) use by setting rules and talking to their child about their SNS use (Lou, Shin, Liu, Guo, & Tseng, 2010). It is important to investigate whether parental rules and communication regarding SNS use can protect adolescents from attaining a lowered physical self-esteem resulting from SNS use. The aim of the current study is to gain more insight into the effect of SNS use on adolescents' physical self-esteem. In addition, the present study will investigate if parents can help prevent the expected negative effects of SNS use on adolescent's physical self-esteem by setting internet-specific rules and by having high-quality parent-child communication about internet/SNS use.

Adolescent SNS Use

When it comes to adolescents' SNS use, a distinction can be made between active and passive users. Active users upload pictures on social media as a form of self-representation, whilst passive users browse their timeline, look at content without direct social interaction (Burnell,

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George, Vollet, Ehrenreich, & Underwood, 2019). The majority of adolescent SNS users are passive users (Brandtzæg & Heim, 2011). They look at idealized images of active SNS users, as active users post pictures promoting a positive self-image (Vogel & Rose, 2016). The Social Comparison theory (Festinger, 1954) suggests that people have the tendency to compare themselves to one-another to obtain an accurate self-evaluation. There are two kinds of evaluation. The first one, upward social comparison (SC), is comparing yourself to someone who is ‘doing better’ than you. The second, downward SC, is comparing yourself to someone who is ‘doing worse’ than you. Regarding SNS use, when active users post idealized images, the SC of the passive user will be mainly upward in nature.

Longitudinal studies have found that upward SC is related to a lowered physical self-esteem (Bij de Vaate, Veldhuis, & Konijn, 2019; Burnell et al., 2019). The study by Tiggemann and Zaccardo (2015) found that Instagram ‘fitness inspiration’ posts decreased physical self-esteem compared to appearance neutral photos. The relation was mediated by frequency of use, where higher frequency of use related to lower physical self-esteem. The appearance-based comparisons typically begin to occur in early adolescence (Mueller, Pearson, Muller, Frank, & Turner, 2010), which is probably because physical appearance contributes to social status in adolescence (Nichter, 2000). Moreover, this effect seems to be more salient for girls than boys (Pila, Stamiris, Castonguay, & Sabiston, 2014), which might be a result of the acknowledged ‘thin-ideal’ for women in (social) media (Bessenoff, 2006). In the study of Carey, Donaghue, and Broderick (2011), they found that high-school girls who were conventionally attractive and thin would be more popular and have more privileges. So, especially for girls, there seems to be a physical standard to which they must live up to. Thus, looking at idealized images might elicit

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upward SC and as a result might decrease physical self-esteem, especially when browsing frequently.

Similarly, to passive SNS use, active SNS use may elicit negative outcomes as well. As posting photos of oneself focusing on appearance may trigger automatic SC, which can negatively impact physical self-esteem (Fejfar & Hoyle, 2000). According to a recent review, a higher frequency of active SNS use correlated with lower physical self-esteem, but no longitudinal studies examining this effect were found (Bij de Vaate et al., 2019). In the current study for both passive and active users of SNS, we expect the outcomes on physical self-esteem to be predominantly negative (Figure 1).

***Hypothesis 1:** Both passive and active SNS use predict lower physical self-esteem, especially for high frequency use.*

***Hypothesis 2:** The relation between SNS use and physical self-esteem is stronger for girls than boys.*

Parenting Styles

Previous research found that parents use different strategies regarding regulating SNS use (e.g. discipline their children, communicate with their children) to establish norms and rules (Lou et al., 2010). According to Baumrind's theory (1966), these strategies can be divided into three parenting styles: authoritarian, authoritative and permissive. Maccoby and Martin (1983) added the neglectful parenting style, as the fourth. The authoritarian parent values obedience and favors strict rules and punishment when the child does not behave as he/she wishes. There is no room for communication, as the parent believes his/her way is right and restricts the child's autonomy. The authoritative parent enforces his/her own perspective via rules, but recognizes the child's individual standpoint. The parent directs the child's behaviors in a rational way and communicates

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when the child refuses to conform to the rules. The permissive parent will let the child regulate their own actions as much as possible and avoids setting rules. He/she will also not encourage the child to obey rules altogether, but will communicate with the child about familial policies. The neglectful parent sets little demands and rules, has a low responsiveness and does not communicate with their child.

The research among primary school children by Valcke, Bonte, De Wever, and Rots (2010) showed that regarding internet use, the authoritative parenting style is the most used by parents, followed closely by permissive style. Previous studies remain somewhat inconclusive about the impact of these parenting styles on children's internet usage. Some research found no effect of parental rules on internet usage (e.g. Eastin, Greenberg, & Hofschire, 2006), but there is also contrasting evidence of parental control leading to safer internet use (e.g. Valcke, Schellens, Van Keer, & Gerarts, 2007). Research regarding communication quality between parent and child seems to be more conclusive. When communication quality is high it affects safer internet use (e.g. Fleming, Greentree, Cocotti-Muller, Elias, & Morrison, 2006) and less compulsive internet use (Van den Eijnden, Spijkerman, Vermulst, Van Rooij, & Engels, 2010). It must be pointed out that these studies all focused on internet use as a whole and not specifically on SNS use.

A recent study examined the relationship between parenting styles and overall self-esteem, including physical self-esteem, in four different countries (Garcia, Serra, Garcia, Martinez, & Cruise, 2019). Adolescents' physical self-esteem scores were the lowest when the parenting style was either authoritarian or neglectful (both lacking in communication) and higher when the parent had adopted the authoritative or permissive parenting style. So, higher quality of communication seems to be an important factor for physical self-esteem in this aspect. Parental rules seem to only have an impact when quality of communication is high, which may then prevent negative outcomes

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of SNS for adolescents. So, for children to accept the rules set by parents regarding SNS, the communication quality must be high. The theory of social control by Hirschi (1969) fits this notion that when people have stronger ties to family, they have a lower propensity for deviant behavior (e.g. rule breaking). So, children are more likely to obey rules set by their parents when they feel supported by the parent. Thus, parental rules may have a positive effect on the relation between SNS use and physical self-esteem, but this effect is stronger when the parent-child communication quality is high (Figure 1). In conclusion, the parenting practices yielding the highest physical self-esteem scores would include at least high parent-child quality of communication, in combination with either low or high rule-setting.

***Hypothesis 3:** Authoritative and permissive parenting styles will moderate the relation between SNS use and physical self-esteem of adolescents.*

***Hypothesis 4:** Parenting styles must encompass high parental communication quality to have impact on adolescents.*

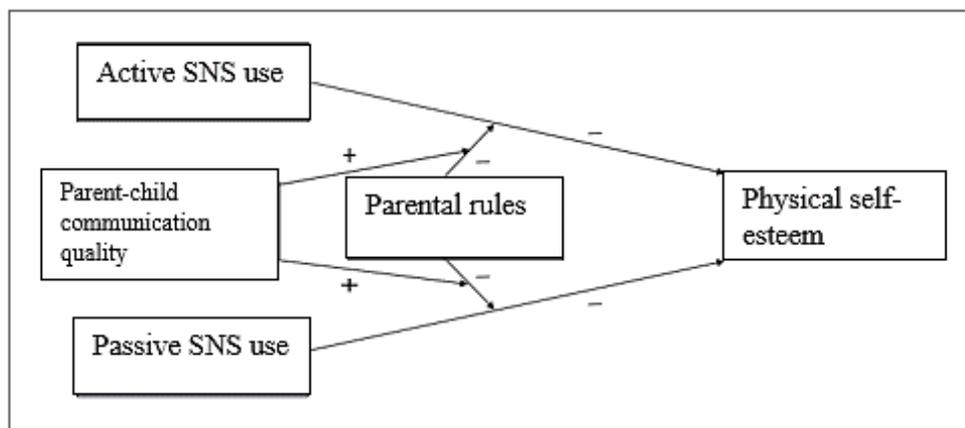


Figure 1. Research model of the relation between SNS use and physical self-esteem with parental rules and parent-child communication as moderators

Current Research

To date, research has not thoroughly investigated the role of parental rule setting in combination with communication quality on the negative effects of adolescent SNS use on

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physical self-esteem. The current research is the first attempt to study the moderating effect of parenting styles on possible negative effects of adolescent SNS use on physical self-esteem. For SNS use, there will be a focus on Instagram, as this platform is more image based, which allows room for social comparison and an effect on physical self-esteem. In addition, the impact of parent-child communication quality will be investigated.

Methods

Participants

The data from this study were obtained from the Digital Youth Project (DiYo), a longitudinal project on the online behaviors of Dutch youth. For the current research, the measurements of waves T3 (2017) and T4 (2018) will be used.

For our sample, we included the adolescents who participated in both wave 3 and 4 and also used Instagram at T3. The final sample consisted of 1119 adolescents with ages ranging from 11-17 ($M_{\text{age}} = 13.62$, $SD = 1.17$) at T3. Gender was evenly distributed (53.8% girls) and 95.7% of participants was of Dutch origin. Of the total sample, education levels ranged from VMBO to VWO with 31.5% from VMBO, 15.4% from VMBO/HAVO, 39.3% from HAVO/VWO and 13.8% from VWO.

Procedure

Adolescents were recruited from multiple secondary schools in the Netherlands. Prior to the measurements, parents received information describing the aims of the study, confidentiality safeguards, and procedures for declining or ending participation. If adolescents wished to participate, their parents could provide passive informed consent (>99% of parents agreed upon participation). At time of measurement, adolescents completed a computer-based questionnaire

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at school during regular school hours. Research assistants were present to supervise data collection, answer student questions, and ensure maximum privacy.

Instruments

Active social networking sites (SNS) use was assessed by asking adolescents ‘how many times per week do you post a message, picture or video on social networking sites’. Answer categories were provided on a 7-point Likert scale ranging from 1 (*never*) to 7 (*over 40*). Higher score indicates frequent active SNS use during a week.

Passive social networking sites (SNS) use was assessed by asking adolescents ‘how many times per day do you look at social networking sites’. Answer categories were provided on a 7-point Likert scale ranging from 1 (*never*) to 7 (*over 40*). Higher score indicates frequent passive SNS use during a day.

Physical self-esteem was assessed by asking adolescents if they (a) feel happy about the way they look, (b) wish their body looked different, (c) feel happy about their figure, (d) find themselves attractive, and (e) feel happy about their appearance. Answer categories were provided on a 5-point Likert scale ranging from 1 (*totally not true*) to 5 (*totally true*). As (b) was the only negative question, it was recoded to match the scale. Cronbach’s α was 0.85 at T3 and T4, indicating that the scale has a good internal consistency. A higher score indicates higher physical self-esteem.

Parental rules regarding SNS. Parental rules was assessed by asking adolescents if (on regular school days) they are allowed to (a) browse the internet for as long as they want, (b) browse for longer than 3 hours, (c) browse the internet if they have not finished their homework, (d) browse the internet in the hour before going to bed, and (e) take their smartphone/tablet to bed when they are going to sleep (Van den Eijnden et al., 2010). Answer categories were

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provided on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). Cronbach's α was 0.87 at T3 indicating that the scale is reliable. The mean scale was transformed so that higher score indicates stricter rules.

Parent- child communication quality. Quality of communication was assessed by asking adolescents if they (a) feel comfortable, (b) feel understood, and (c) feel taking seriously when he/she talks about internet use or games with his/her parents (Van den Eijnden et al., 2010). Answer categories were provided on a 5-point Likert scale ranging from 1 (*totally not true*) to 5 (*totally true*). Cronbach's α was .90 at T3, showing to be a very reliable scale. A higher score indicates better quality of communication regarding internet use.

Strategy of Analysis

Descriptive statistics and correlations were taken from the subsample (N = 1119) in SPSS. For gender and education level, Spearman's Rho was used, for all other variables Pearson correlations. Gender differences were analysed using an independent sample *t*-test. Next, the effect of highly active and passive SNS use on physical self-esteem (*T4*) for both genders was examined using a non-parametric Mann-Whitney U test as physical self-esteem (*T4*) is not normally distributed ($D(1119) = 0.10, p < .05$). In addition, group differences were conducted based on high frequency active and passive users. High frequency is regarded when posting six or more times a week or browsing six or more times a day, in comparison to less. All variables were measured at T3, except physical self-esteem which was measured at both T3 and T4.

To examine the contribution of parental mediation on the effect of SNS use on physical self-esteem, a hierarchical multiple regression analysis was performed. Variables which may affect physical self-esteem (*T4*) were entered in hierarchal manner into the regression model for both passive SNS use and active SNS use. Physical self-esteem (*T4*) was the dependent variable

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and gender, education level and physical self-esteem ($T3$) were the independent variables for step one. In step two, the independent variable of passive or active SNS use was added to our model. In step three, the moderator parental rules was added. In step four, the interaction effect of passive or active SNS use with parental rules was added. Lastly, the moderator parent-child communication quality and the three-way interaction between passive or active SNS use with parental rules and parent-child communication quality were added for step five.

Results

Descriptives

General descriptives. Of the 1119 SNS users, 51% posted a message, picture or video less than once per week, 12.2% posted 6 or more times during the week and 3.8% over 40 times per week. 48.1% of participants reported looking at SNS 6 or more times a day and 9.7% more than 40 times a day. Regarding physical self-esteem, 78% of participants reported a moderate to high physical self-esteem at $T3$ and 75.2% of participants at $T4$.

Gender differences. Regarding gender differences, boys reported more active SNS use ($t(1117) = 3.47, p < .001$) than girls. Boys also reported higher physical self-esteem at both

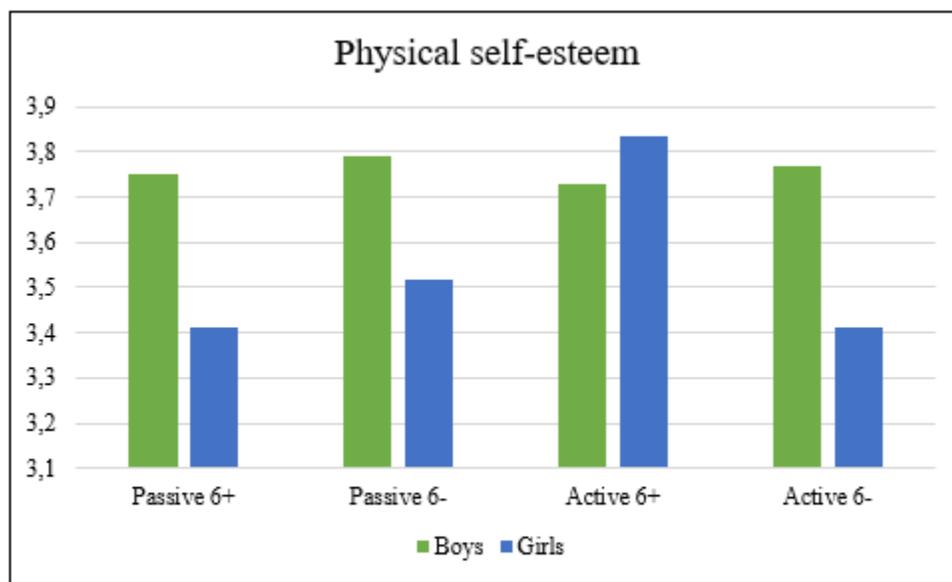


Figure 2. Graph illustrating the different effect for gender of high SNS versus low SNS use on physical self-esteem

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waves than girls (T3: $t(1117) = 6.52, p < .001$; T4: $t(1117) = 6.56, p < .001$). Girls reported better parent-child communication quality ($t(1117) = -2.94, p < .003$) than boys. There were no significant differences between boys and girls for parental rules or passive SNS use.

Looking at the effect of high frequency SNS use, the sample was split into groups for both active and passive users. High frequency active users were defined as ‘posting six or more times per week’ and high frequency passive users as ‘browsing six or more times a day’. High frequency active SNS users reported higher overall physical self-esteem at T4 ($p < .005$), compared to low frequency active SNS users. There was no effect for high frequency passive SNS use ($p > .05$), compared to low frequency passive SNS use. Next, the group was separated by gender (girls: $n = 602$). For girls, high frequency active SNS use had a significant effect on physical self-esteem ($p < .001$), but not boys ($p = .745$). Girls who post more on SNS reported higher physical self-esteem (Figure 2). Furthermore, high frequency passive SNS use of girls had a significant effect on physical self-esteem ($p = .039$), but not of boys ($p = .814$). Girls who browsed more than six times a day reported lower physical self-esteem (Figure 2).

Correlations

To investigate possible associations between different variables in the study, both Spearman rho and Pearson correlations were calculated (Table 1). Girls have a lower physical self-esteem than boys ($r = -.20, p < .001$) and adolescents with a higher education level experience a lower level of physical self-esteem than adolescents with a lower education level ($r = -.08, p < .001$). The highest correlations were found between physical self-esteem at T3 and physical self-esteem at T4 ($r = .59, p < .001$) and between passive SNS use and parental rules; this negative correlation ($r = -.32, p < .001$) indicating that parents who don’t set clear rules

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regarding internet use beforehand, have children who spend more time on SNS. Also, parents with a higher communication quality, have less parental rules ($r = -.11, p < .001$).

Table 1.

Descriptive statistics and pairwise correlations

| Variable | %/M (SD) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------------------------------------|-------------|---|-------|--------|--------|--------|--------|--------|--------|
| 1. Gender (boys %) | 46.2 | - | .17** | -.02 | -.02 | -.00 | .08* | -.20** | -.20** |
| 2. Education level (low %) | 31.5 | | - | -.12** | -.26** | .02 | .08* | -.09** | -.08** |
| 3. Passive SNS use (T3) | 4.42 (1.52) | | | - | .29** | -.32** | -.03 | -.09** | -.03 |
| 4. Active SNS use (T3) | 1.99 (1.48) | | | | - | -.09** | -.02 | .02 | .06* |
| 5. Parental rules (T3) | 4.32 (0.94) | | | | | - | -.11** | .06 | .05 |
| 6. Parent-child comm. quality (T3) | 3.44 (1.05) | | | | | | - | .18** | .12** |
| 7. Physical self-esteem (T3) | 3.63 (0.81) | | | | | | | - | .59** |
| 8. Physical self-esteem (T4) | 3.59 (0.83) | | | | | | | | - |

Note. Spearman rho was used for ordinal and continuous variables. Pearson correlation was used for dichotomous variables. SNS: Social Networking Sites

* $p < .05$. ** $p < .01$. (two-tailed)

Hierarchical Multiple Regression

Passive SNS use. To look at the effect of passive SNS use on physical self-esteem with the moderating effects of parental rules and parent-child communication quality, a hierarchical multiple regression was performed (Table 2). The first model included control variables and physical self-esteem ($T4$) as the dependent variable. This model was significant $F(3, 1115) = 202.46, p < .001$, as both gender $t(1115) = -3.30, p < .001$ and physical self-esteem at T3 $t(1115) = 23.24, p < .001$ had a significant effect on physical self-esteem T4. Model 1 explained 35% of the variance and models 2, 3, 4 and 5 showed no significant change in explained variance over and above Model 1. Still, the final model, model 5, was significant $F(8, 1110) = 77.21, p < .001$. There was no significant effect of passive SNS use on physical self-esteem ($T4$) $t(1114) = 0.74, p = .460$, and not when parental rules was added $t(1113) = 1.13, p = .260$. The two-way

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Table 2.

Model regression analysis of SNS use with physical self-esteem T4 as dependent

| | | Passive | | | | Active | | | |
|---|----------------------------|---------|------|------|----------------------------------|--------|-----|------|----------------------------------|
| | | B | S | Beta | R ² _{change} | B | S | Beta | R ² _{change} |
| 1 | Physical self-esteem (T3) | .59*** | .03 | .57 | .353 | .59*** | .03 | .57 | .353 |
| | Gender | -.14** | .04 | -.08 | | -.14** | .04 | -.08 | |
| | Education level | -.00 | .01 | -.01 | | -.00 | .01 | -.01 | |
| 2 | SNS use | .01 | .01 | .02 | .000 | .02 | .01 | .04 | .002 |
| 3 | Parental rules | .03 | .02 | .03 | .001 | .02 | .02 | .02 | .001 |
| 4 | Two-way interaction | -.02 | .01 | -.11 | .001 | -.01 | .01 | -.04 | .001 |
| 5 | Parent-child comm. quality | .03 | .020 | .03 | .003 | .03 | .02 | .03 | .004* |
| | Three-way interaction | -.01 | .00 | -.04 | | -.02* | .01 | -.06 | |

Note. SNS: Social Networking Sites

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

interaction, passive SNS use and parental rules, did not yield a significant effect $t(1112) = -1.41$, $p = .159$, when added in Model 4. Lastly, Model 5, parent-child communication quality did not yield a significant effect $t(1110) = 1.27$, $p = .203$ on physical self-esteem T4. Also, the added three-way interaction effect of passive SNS use, parental rules and parent-child communication quality did not yield a significant effect $t(1110) = -1.71$, $p = .088$.

Active SNS use. For active SNS use, the first model also included the control variables and physical self-esteem (T4) as the dependent. This model was significant $F(3, 1115) = 202.46$, $p < .001$, as both gender $t(1115) = -3.30$, $p < .001$ and physical self-esteem (T3) $t(1115) = 23.24$, $p < .001$ had a significant effect on the physical self-esteem T4. The final model was also significant $F(8, 1110) = 77.86$, $p < .001$. Model 1 explained 35% of the variance and models 2, 3, 4 showed no significant change to Model 1. Model 5 for active SNS use did show a significant change to models 1, 2, 3 and 4 $F_{change}(8, 1110) = 3.62$, $p = .027$, see Table 2. There was no

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significant effect of active SNS use on physical self-esteem ($T4$) $t(1114) = 1.63, p = .103$, nor when parental rules was added $t(1113) = 0.98, p = .328$. The two-way interaction, active SNS use and parental rules, did not yield a significant effect $t(1112) = -0.97, p = .334$, when added to model 4. Lastly, Model 5, adding parent-child communication quality did not yield a significant effect $t(1110) = 1.35, p = .178$. However, the added three-way interaction effect of active SNS use, parental rules and parent-child communication quality did yield a significant effect $t(1110) = -2.38, p = .017$. As illustrated in Figure 3, in families with high parental rules but with a low quality of communication (i.e. authoritarian parenting style), frequency of active use does not seem to matter. Independent of frequency of active SNS use, high parental rules are related to a higher physical self-esteem in adolescents. In families with high parental rules and high quality

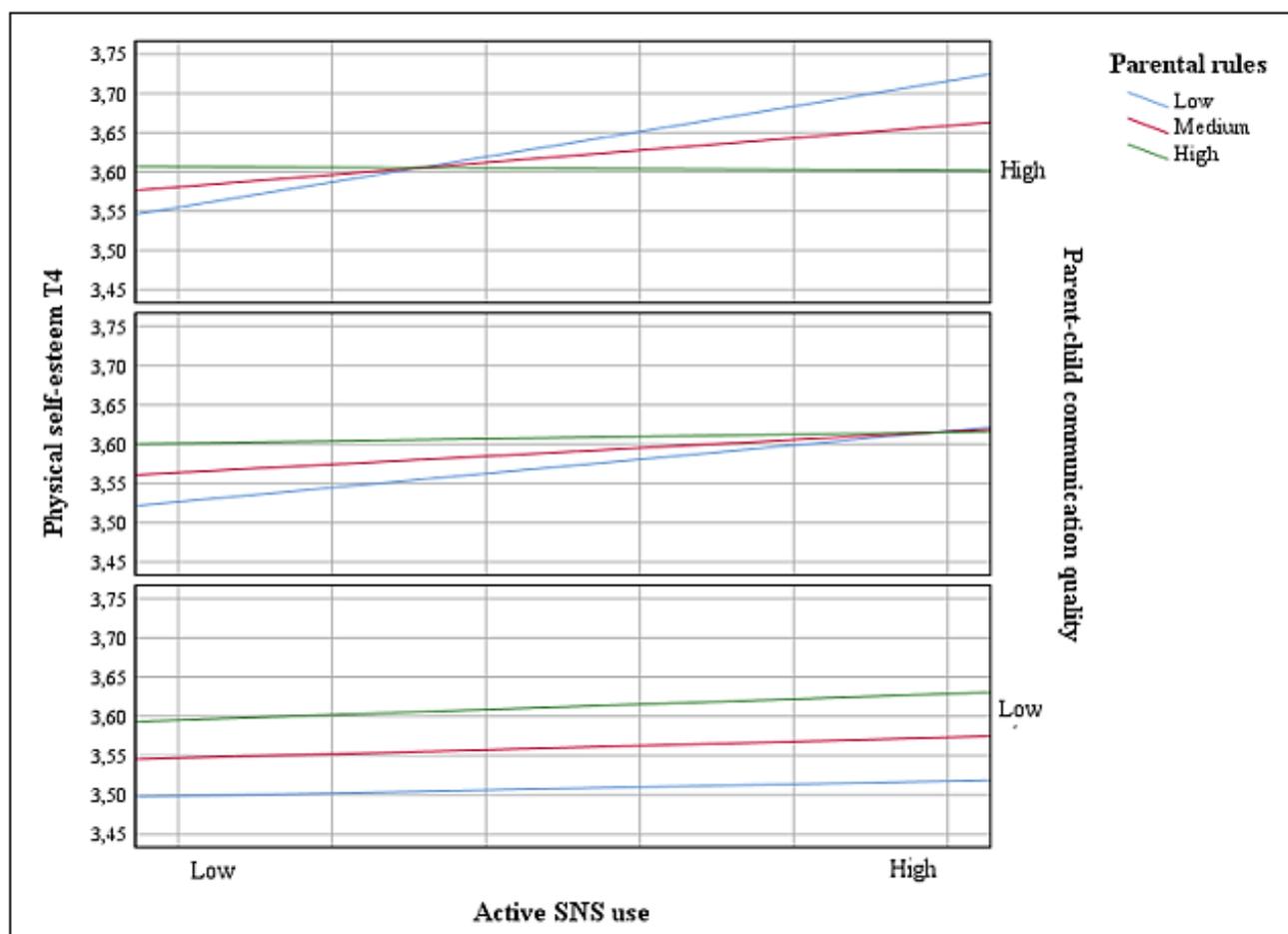


Figure 3. Model regarding the interaction effect of active SNS use, parental rules and parent-child communication quality on physical self-esteem

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of communication (i.e. authoritative parenting style), frequency of active use does not seem to matter as well and physical self-esteem seems to be just as high (~ 3.6) as with authoritarian parents. In families with low parental rules but a high quality of communication (i.e. permissive parenting style), adolescents who frequently engage in active SNS use experience higher physical self-esteem than adolescents who seldomly engage in active SNS use. In families with low parental rules and low quality of communication (i.e. neglectful parenting style), frequency of active use does not seem to matter, but this parenting style related to an overall lower physical self-esteem.

Discussion

The present longitudinal study, to our knowledge, was the first that looked at the mitigating effects of parenting behaviours on the possible negative outcomes of their children's SNS use. More specifically, this study analysed the protective effect of parental rules in combination with high communication quality on the relationship between SNS use and physical self-esteem. Results showed neither active nor passive SNS use directly predicted physical self-esteem. Also, parental rules or parent-child communication quality had no direct effect on physical self-esteem. However, there was an effect for the permissive parenting style on the relation between active SNS use and physical self-esteem (Figure 3).

Active SNS use at T3 was not significantly related to physical self-esteem one year later, which is in contrast with our first hypothesis. Looking at active SNS use, previous cross-sectional research found that high frequency active SNS use related to lower physical self-esteem (Bij de Vaate et al., 2019). The current research did not find such an effect. However, there was a cross-sectional effect for frequency of active SNS use on physical self-esteem, where posting

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more resulted in higher physical self-esteem. This is in contrast with our first hypothesis, as we expected lower physical self-esteem of high frequency users.

The current research did not find an effect of passive SNS use on physical self-esteem. Multiple longitudinal studies have shown that upward SC predicts lower physical self-esteem (e.g. Bij de Vaate et al, 2019). It was expected that passive SNS use would predict lower self-esteem a year later, because passive SNS might elicit upward SC for adolescents (Fejfar & Hoyle, 2000). In contrast with our first hypothesis, frequency of passive use, also, had no effect on physical self-esteem.

Looking at gender, however, the cross-sectional results did show an effect. In line with our second hypothesis, the results regarding SNS use suggested that the relation between SNS use and physical self-esteem was especially meaningful for girls. Looking at high frequency versus low frequency use of girls, results showed that high frequency active use resulted in higher physical self-esteem of girls. Moreover, high frequency passive use resulted in lower physical self-esteem of girls (Figure 2). Previous research found that social status attained by appearance is more salient for girls (Carey et al., 2011; Pila et al., 2014). So, girls might feel more pressure to portray themselves a certain way through SNS than boys. Girls who actively post ‘pretty’ photos of themselves, might look at these photos and evaluate themselves as ‘good-looking’, increasing their physical self-esteem. Girls who are passively using SNS look at these photo’s multiple times a day, might feel as though they are not as ‘pretty’ as the girls who post idealized images, thereby decreasing their physical self-esteem.

It is important to note the bidirectional relationship of active SNS use and physical self-esteem. Adolescents who have a more fragile self-esteem post less pictures than adolescents with high self-esteem, perhaps in fear of negative comments (Barry, Doucette, Loflin, Rivera-Hudson,

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& Herrington, 2015). Also, a higher physical self-esteem may not always be the best outcome and may relate to problems. People who use SNS to project a positive image or attractiveness might have narcissistic tendencies (Vazire, Naumann, Rentfrow, & Gosling, 2008). In Figure 3 we see that adolescents who post frequently, but experience high rule-setting, independent of communication quality, still report an above average physical self-esteem. Parents of adolescents who post online, might try to protect their children from these narcissistic tendencies by setting rules regarding their SNS use.

The current study did not find a direct effect of either parental rules or parent-child quality of communication for both active and passive SNS use on physical self-esteem. Also, the two-way interaction between parental rules and SNS use did not yield a significant effect for physical self-esteem. It is important to interpret the following results with care, as the relation between these factors seem nuanced. Even though none of these factors directly predicted physical self-esteem, we found an effect of the three-way interaction (i.e. the interaction between active SNS use, parental rules and parent-child communication) regarding parenting styles. The permissive parenting style yielded the highest physical self-esteem when adolescents had a higher frequency of active SNS use (Figure 3). This indicates that when adolescents post more frequently on SNS, they benefit from less rules set by parents and higher quality of communication. This might be a result of the quality of communication between the child and the parent, the feeling to be able to communicate with parents, and experiencing this as supportive. When frequency of use was low, the authoritative and authoritarian parenting styles had similar outcomes for physical self-esteem. So, adolescents who post not as frequently on SNS, seem to benefit from more rules and either high or low communication quality. The neglectful parenting style resulted in the lowest physical self-esteem, independent of the frequency of SNS use. So, partially confirming our third

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hypothesis, the permissive parenting style resulted in the highest physical self-esteem and the authoritarian and authoritative parenting style yielded similar results. It seems that adolescents who post more, because they do not experience a lot of rules regarding their SNS use but receive good support and experience their communication with the parents as good, are more content with themselves. Also, previous research found that higher self-esteem relates to higher frequency of posting, possibly as a result of wanting positive feedback from followers (Barry et al., 2015). Adolescents posting less, might be the result of strict rules of parents, making it harder for them to receive positive feedback from others via SNS, which keeps their physical self-esteem the same. However, adolescents who post less frequently, but do not experience high rule-setting, reported lower self-esteem than adolescents who experience high rule-setting, independent of communication quality. This may be because these rules also prevent them from high frequency passive SNS use, which relates to lower physical self-esteem. In conclusion, there are three parenting styles resulting in the highest physical self-esteem; permissive, authoritarian and authoritative, but the permissive parenting style is the most optimal for high frequency active users.

Hereby, we can also partially confirm our fourth hypothesis regarding communication quality, as the two of the three best parenting styles do encompass high communication quality. The current study found no difference between the authoritarian and authoritative parenting style, independent from frequency of SNS use. As the authoritarian parenting style encompasses low quality of communication, this is in contrast with our hypothesis. This is also in contrast with previous research of Garcia and colleagues (2019), which showed the lowest scores on physical self-esteem for both authoritarian and neglectful parenting styles. So, it seems that

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either high parental rules or high parent-child communication quality must be present, not just high parent-child communication quality.

Limitations

The current study has important strengths, such as the longitudinal design with two annual measurements, and using robust statistical models that were controlling for gender and physical self-esteem at baseline. Also, the used school sample size comes close to being a representative sample of the Dutch adolescent population, thereby increasing its external validity. However, some limitations should be noted as well. Active and passive SNS use were measured using only one question each, which gives us no further insight in what content adolescents looked at or posted on SNS. Bij de Vaate and colleagues (2018) mentions the importance of specific types of media use to uncover different pathways. Here, we do not have insight in these different pathways. In addition, questionnaires were only filled-out by the adolescents, and therefore are measuring perceived parental rules and parent-child communication quality by adolescents and not parents. Parents might have another view about how they present rules or how they communicate with their child. Future research might also want to focus on how parents perceive their own parenting style. Also, the mediating role of social comparison can be included, as this has been shown to be important for the relation between passive SNS use and physical self-esteem (Burnell et al., 2019).

Conclusion

The present study contributed to our insight into the relationship between SNS use and adolescent physical self-esteem and looking at ways for parents to mitigate the possible negative effect of SNS use through different parenting styles. The relation between active SNS use and physical self-esteem seems to improve when parental rules regarding internet use are low and the

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parent-child communication quality is high (permissive parenting style). High parental rules showed a higher physical self-esteem in the condition of a low quality of parent-child communication (authoritarian parenting style), but physical self-esteem was just as high when communication was high as well (authoritative parenting style). Interventions can make use of this knowledge by implementing strategies for parents to create better forms of communication between them and their children. Regarding gender differences, we saw that high frequency active SNS use is associated with higher physical self-esteem for girls and high frequency passive SNS use associated with lower physical self-esteem for girls. Therefore, these findings may be used to guide interventions towards targeting low self-esteem in adolescent girls. Still, more research needs to be done regarding ways parents can mitigate negative effects of SNS use on adolescent's well-being, as physical self-esteem is just one possible outcome of SNS use that can influence adolescent's well-being.

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