



BSc in Psychology
Department of Psychology

**The Mediating Role of Social Comparison in Passive and
Active Social Media Use and the Relationship With Self-
Esteem and Loneliness in Girls and Boys**

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Foreword

Submitted in partial fulfillment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.

This thesis was completed in the Spring of 2021 and may therefore have been significantly impacted by the COVID-19 pandemic. The thesis and its findings should be viewed in light of that.

Abstract

Screen time and time spent on social media have been dominant in the literature to date. What kind of social media use people engage in has not been studied as much but appears to be as important. Active and passive social media use are variables that have gotten more attention recently. The aim of this study was to examine the mediating role of social comparison in active and passive social media use and the relationship with self-esteem and loneliness in adolescents as well as look into gender differences. The study was cross-sectional and data from a population survey from Icelandic adolescents was used ($N = 10.441$) with a random sample of 2.081 individuals. Both active and passive social media use related to decreased self-esteem and increased loneliness and social comparison orientation. Girls engaged more in both active and passive social media use, had lower self-esteem, experienced more loneliness and compared themselves more to others than boys. Hierarchical linear regression was used for analysis which revealed that social comparison orientation significantly mediated the relationship between passive social media use and self-esteem, as well as loneliness. Future research should consider experimental studies to determine causal relationships as well as longitudinal research.

Keywords: adolescents, social media use, self-esteem, loneliness, social comparison.

Útdráttur

Skjótími og tíma sem eytt er á samfélagsmiðlum eru breytur sem hafa verið áberandi hingað til í rannsóknum. Hvernig fólk notar samfélagsmiðla hefur verið minna rannsakað en virðist þó vera jafn mikilvægt. Virk og óvirk samfélagsmiðlanotkun eru tvær tegundir samfélagsmiðlanotkunnar sem hafa fengið aukna athygli nýlega og var því markmið rannsóknarinnar að skoða miðlunarhlutverk félagslegs samanburðar í sambandi við virka og óvirka samfélagsmiðlanotkun og tengsl þess við sjálfstraust, einmannaleika og skoða kynjamun. Rannsóknin var þversniðsrannsókn og var byggð á gögnum frá Rannsóknum og Greiningu ($N = 10.441$) með 2.081 handahófskenndu úrtaki. Bæði virk og óvirk samfélagsmiðlanotkun tengdist minnkuðu sjálfstrausti og auknum einmannaleika og samanburði. Stelpur notuðu samfélagsmiðla meira á bæði virkan og óvirkan hátt, voru með minna sjálfstraust, upplifðu meiri einmannaleika og báru sig meira saman við aðra en strákar. Stigveldis línuleg aðhvarfsgreining var notuð til gagnagreiningar sem gaf til kynna að tilhneiging til samanburðar miðlaði sambandinu á milli óvirkrar samfélagsmiðlanotkunnar og sjálfstrausts og einmannaleika. Framtíðarrannsóknir ættu að íhuga langtímarannsóknir ásamt tilraunum þar sem hægt væri að segja til um orsakasambönd.

Lykilhugtök: unglingar, samfélagsmiðlanotkun, sjálfstraust, einmannaleiki, félagslegur samanburður.

The Mediating Role of Social Comparison in Passive and Active Social Media Use and the Relationship With Self-Esteem and Loneliness in Girls and Boys

Social media has been defined as websites and applications where users can create and share content with other users as well as interact with each other (Pittman & Reich, 2016). The main focus in the literature of social media has been on the frequency and duration of social media use. However, recently more variables have been studied regarding the matter, like active and passive social media use (SMU). Active SMU is when users share things such as post texts, images, audios, or videos and respond to other users' content. Passive SMU is when users do not post any content and keep low interaction with others but observe other profiles (Escobar-Viera et al., 2018).

Self-esteem

Studies have found a relationship between the frequency of SMU and low self-esteem. Those who use social media more appear to have lower self-esteem (Acun, 2020; Denti et al., 2012; Hawi & Samaha; 2017). Self-esteem is the individuals' perceptions and evaluations of the self; it is a broader self-concept and can be negative or positive. It is to the extent to which the person views himself as worthwhile and competent (Acun, 2020; Çivitci & Çivitci, 2009; Vogel et al., 2014). Studies have shown serious consequences of low self-esteem in adolescents where it has been related to poorer mental and physical health, worse economic position in adulthood, major depression, anxiety, etc. (Trzesniewski et al., 2006).

Steinsbekk et al. (2020) found that children who used social media more in an other-oriented way experienced a decrease in their self-esteem two years later while those who used their social media in a more self-oriented way experienced no change in their self-esteem. However, this self-esteem decrease was only present among girls, but self-oriented corresponds to active SMU and other-oriented to passive SMU. Gonzales and Hancock

(2010) showed that in a stimulus condition, those who examined and edited their profiles on social media reported higher self-esteem compared to those who viewed other profiles.

Social comparison orientation

Social media facilitates social comparison in users easily (Jan et al., 2017). Social comparison can happen in two different ways; by upward social comparison (USC) or downward social comparison (DSC). In USC people compare themselves to individuals who they assess as superior to themselves and have positive characteristics while in DSC people compare themselves to individuals who they assess as inferior to themselves and have negative characteristics (Vogel et al., 2014).

Jan et al. (2017) found that 88% of people compare themselves to others on Facebook and 98% of it is USC. Furthermore, Burnell et al. (2019) found that people who use Facebook passively were more likely to engage in social comparison. However, the relationship was weaker for the younger participants. Although according to Vogel et al. (2015) people with high social comparison orientation and engage in passive SMU have poorer self-esteem compared to those with low social comparison orientation.

Vogel et al. (2014) found a relationship between frequency of Facebook use and USC and DSC, though the upward was stronger, which was then a predictor of low self-esteem. The USC mediated the relationship between Facebook use and self-esteem. Thus, the frequency of Facebook use and its relationship with self-esteem reduced when the mediators (USC and DSC) were added. Therefore, the relationship depends on the extent of USC the user makes.

Loneliness

Some believe that with the emergence of social media, people have gotten more socially isolated and therefore more lonely and some studies have certainly shown this relationship between the frequency of SMU and loneliness (Hunt et al., 2018; Primack et al.,

2017). However, Pittman (2015) has shown the opposite, because, in his study, those who used social media were less lonely than those who did not. Loneliness can be defined by the unpleasant experience when someone feels like the quality and quantity of social relations are deficient. It results in emotional distress because of their inability to meet social and emotional expectations in human relationships (Çivitci & Çivitci, 2009; Durak, 2018; Pittman, 2018; Pittman & Reich, 2016). Studies have shown serious consequences of loneliness in adolescents, it can jeopardize healthy development, relates to less life satisfaction, low self-esteem, depression, suicide, and can have overall negative effects on emotional, social, and physical health (Allen et al., 2014; Chang et al., 2015; Çivitci & Çivitci 2009; Lin et al., 2020; Pittman, 2015; Pittman & Reich, 2016; Weis, 2018).

In Yang's (2016) study the people who engaged in active Instagram use seemed to experience less loneliness than those who used Instagram passively. Although, the relationship only applied to those with low social comparison orientation. In Pittman's (2018) study his results determined that social media significantly predicted reduced loneliness. In addition, perceived intimacy or the extent to which a person feels connected to others through social media turned out to be a predictor of loneliness. When Pittman controlled for the mediator (perceived intimacy) the effects of social media on loneliness decreased. Thus, loneliness appeared to be an indicator of social support deficiency, those who were lonely were less likely to use social media to strengthen their intimacy towards others which then resulted in a decrease in loneliness. Pittman found that those who believe that social media is a good way to connect to others, benefit the most from it.

Gender

Studies have shown that younger groups and women use social media more than men and older groups. In addition, girls use social media more actively (Andreassen et al., 2016; Hawi & Samaha, 2017). Therefore, girls may be more vulnerable to the effects of social

media where they also seem to have lower self-esteem in general and are more likely to compare themselves to others than boys. In addition, they are more likely to make more USC (Denti et al., 2012; Krasnova et al., 2013; Steinsbekk et al., 2020; Thorisdottir et al., 2019; Vogel et al., 2014;).

Current study

The previously mentioned studies indicate that by selectively self-presenting information about oneself (like in active SMU), people can increase their self-esteem by building up some kind of a perfect image of themselves. Meanwhile, the people who are only evaluating other's posts (like in passive SMU) engage in an upward social comparison which negatively impacts their self-esteem. Furthermore, frequent exposure to this unrealistic image can make people feel like they live less happy and interesting lives than others (Primack et al., 2017). Adolescents have indeed gotten more physically socially isolated, but in exchange, it appears that today, they simply do not have the same need for physical relationships as in the past. It seems like technology is substituting the need for physical relationships and that people are now meeting their needs through social media (Clark et al., 2014).

Studies show that those with high self-esteem seem to be more likely to have low social comparison orientation (Vogel et al., 2015). Active SMU appears to have more positive benefits on self-esteem compared to passive usage (Gonzales & Hancock, 2010; Steinsbekk et al., 2020). However, passive SMU has been positively related to social comparison (Burnell et al., 2019). In addition, those with high social comparison orientation that engage in passive SMU are more likely to have lower self-esteem as well as being more lonely (Vogel et al., 2015). Furthermore, girls and younger groups appear to be more vulnerable to the effects of social media (Andreassen et al., 2016; Denti et al., 2012; Hawi & Samaha, 2017; Krasnova et al., 2013; Steinsbekk et al., 2020; Thorisdottir et al., 2019; Vogel et al., 2014).

Thus, considering the serious consequences of loneliness and low self-esteem, and the lack of research on this matter the aim of this study was to examine the mediating role of social comparison in active and passive SMU and the relationship with self-esteem and loneliness in adolescents as well as look into gender differences. The following question will be answered; Does active and passive social media use relate to social comparison, self-esteem, and loneliness, and what role does gender play? Based on the literature review, the following are the hypotheses: (1) active SMU is positively related to self-esteem, (2) active SMU is negatively related to loneliness, (3) passive SMU is positively related to social comparison orientation, (4) social comparison orientation mediates the relationship between passive SMU and self-esteem and (5) social comparison orientation mediates the relationship between passive SMU and loneliness.

Method

Participants

For this current study data from the survey Youth in Iceland 2018 were used for analysis. The participants were 10.441 in total, with an 84% response rate but a randomized sample of 2.081 individuals was used in this study. The sample included Icelandic elementary students aged 13-17 ($M_{age} = 15$) who attended the class on the day when the questionnaire was conducted. The gender ratio was equal with 50.6% ($N = 1046$) boys and 49.4% ($N = 1021$) girls where 14 did not report their gender. The parents and guardians of the students received an email about the survey and they were required to reply if they did not want their child to participate. The participants got no reward for participating in the study.

Measures

Age and gender

Age was determined with the question “What year are you born?” with the answer options (1) 2001, (2) 2002, (3) 2003, (4) 2004, (5) 2005, (6) 2006. The question “are you a

girl or a boy?” was used to determine the participants’ gender and the answer options were on a two-point scale.

Active and passive social media use

The questionnaire used to measure the type of social media use (active or passive) was the Multidimensional Scale of Facebook Use (Frison & Eggermont, 2015). The word Facebook was replaced with the word social media to account for all kinds of social media and then translated to Icelandic. The question was “How many times a day do you do anything of the following on social media (for example on Facebook, Snapchat, Instagram, etc.)”. The question had six items, such as “Chats or sends messages, pictures or video”, “Post a photo or video of your life”, “Observe your friends’ profiles/accounts”. The answers were on a seven-point scale, (1) never, (2) once a month or less, (3) once a week (4) a few times a week, (5) once a day, (6) 2-5 times a day and (7) 6 times a day or more often. The items were divided into two categories, where the questions regarding active usage were computed into one variable for the analysis and named Active social media use while the ones about passive usage were computed into one variable and named Passive social media use. Cronbach’s α for active social media use in this study was .78 which is considered acceptable while Cronbach's α for passive social media use was .88 which is considered good. These values are consistent with previous findings (Thorisdottir et al., 2019).

Self-esteem

The participants’ self-esteem was measured with the common Rosenberg scale (Rosenberg, 1965). The questionnaire consists of both positive and negative statements thus the answer options were recoded so the statements would all point in the same direction. A higher score indicated higher self-esteem. The question was “How well or badly do you think the following statements apply to you?” which included ten items about self-esteem, such as “I am able to do things as well as most other people” and “I feel that I have a number of good

qualities”. The answers were on a four-point Likert scale from (1) applies to me very well, (2) applies to me rather well, (3) applies to me rather bad, (4) applies to me very bad. Therefore, the ten items were all computed into one variable for the analysis and named Self-esteem. The Rosenberg scale is one of the most used self-esteem measurement in the world where the general psychometric properties have been shown to be good (Bagley & Mallick, 2001; Eklund et al., 2018; Gunnlaugsson et al., 2011; Martín-Albo et al., 2007; Sinclair et al., 2010). The Cronbach’s α for the Rosenberg scale in this study was .90 which is considered high reliability.

Loneliness

The question “How often have you noticed the following dysphoria or discomfort in the last week?” included 17 items, but to measure loneliness only one item was used, “You felt lonely”. The answers were on a four-point scale, (1) almost never, (2) seldom, (3) sometimes, (4) often. Where a higher score on the scale indicated more loneliness. The most common answer was almost never (54.7%/N = 1.139) and the least common answer was often (9.5%/N = 198). Loneliness has been used before in a similar way in a sample of Icelandic youths (Vilhjalmsson & Thorlindsson, 1992).

Social comparison orientation

The Iowa-Netherlands Comparison Orientation Measure was used to measure social comparison orientation (Gibbons & Buunk, 1999). The question was “How much do you agree or disagree with the following statements?” and then eleven items asked about the social comparison. Such as “I often compare myself with others with respect to what I have accomplished in life”, “I often try to find out what others think who face similar problems as I face” and “I often like to talk with others about mutual opinions and experiences”. The answers were on a five-point Likert scale, (1) strongly agree, (2) agree, (3) neither agree nor disagree, (4) disagree, (5) strongly disagree. The answer options were recoded so the

statements would all point in the same direction. A higher score on the scale indicated more tendency to comparison. The eleven items were all computed into one variable for the analysis and named Social comparison orientation. The psychometric properties of the scale have been proven to be good (Gibbons & Buunk, 1999; Schneider & Schupp, 2012). In this study, the internal consistency was good because Cronbach's α was .82.

Time spent on social media

Social media use was measured with the question "How much time do you spend on average in the following daily?". The question had six items but only one was used to measure the social media usage. The item was "Being on communication media on the internet, for example, Facebook, Snapchat, Twitter, Instagram, Vine, Tumblr, WhatsApp, Skype, etc". The answer options were from (1) almost none, (2) ½-1 hour, (3) around 1 hour,... (8) 6 hours or more. The most common answer was "½- 1 hour" (18.3%/N = 381) and the least common answer was "around five hours" (4.7%/N = 97). The mean answer was "around two hours" (17%/N = 361). The variable has been used before in the same way in a sample of Icelandic youths (Thorisdottir et al., 2019).

Parental support

The Perceived Parental Support Scale was used to measure participants' parental support (Kristjansson et al., 2011). The question was "How easy or hard is it for you to get the following from your parents?" and the items were five, such as "caring and warmth", "discussions about personal affairs" and "advice about the studies". The answer options were (1) very hard, (2) rather hard, (3) rather easy, (4) very easy. Thus, a higher score indicated more perceived peer support. The five items were all computed into one variable for the analysis and named Parental support. The reliability and internal consistency have been shown to be acceptable for the scale (Kristjansson et al., 2010; Kristjansson et al., 2011;

Kristjansson et al., 2008; Mann et al., 2014; Thorisdottir, et al., 2019). The Cronbach's α in this study was .89 which is considered good.

Peer support

To measure peer support the Perceived Parental Support Scale was used but the word parents was replaced by the word friends (Kristjansson et al., 2011). The question was "How easy or hard is it for you to get the following from your friends?" and the items were five, such as "caring and warmth", "discussions about personal affairs" and "advice about the studies". The answer options were (1) very hard, (2) rather hard, (3) rather easy, (4) very easy. Thus, a higher score indicated more perceived peer support. The five items were all computed into one variable for the analysis and named Peer support. The scale has been used before among Icelandic youths showing high reliability (Kristjansson et al., 2010; Mann et al., 2014; Thorisdottir et al., 2019). Cronbach's α in this study was .89 which is considered good.

Financial standing

The financial standing of the participant's family was measured with the question "If you think about your family's financial standing, how well do you think your family stands financially compared to other families in Iceland?". The answer options were from (1) stands much better, (2) stands rather better, (3) stands somewhat better, (4) stands similarly, (5) stands somewhat worse, (6) stands rather worse, and (7) stands much worse. The most common answer was "stands similarly" (42.4%/N = 882) and the least common answer was "stands much worse" (0.3%/N = 7). The mean answer was "stands somewhat better" (24%/N = 499). This measure has been used before among Icelandic youths (Mann et al., 2014; Thorisdottir et al., 2019).

Family structure

To measure family structure the following question was used, “Who lives in your home?” and the answer options were such as “I live with both of my parents”, “I live mainly with my mother but not my dad” and “I live with my father and his cohabiter”. The majority answered, “I live with both of my parents” (68.7%/N = 1.439) but the least common answer was “I live on my own” (0.1%/N = 2). The variable was coded in that way that “I live with both of my parents” was coded as 1 and “other family arrangements” was coded as 0. The variable has been used in the same way previously among Icelandic youths (Kristjansson et al., 2010; Kristjansson & Sigfusdottir, 2009; Mann et al., 2014; Sigurvinsdottir et al., 2017; Thorlindsson et al., 2007; Thorisdottir et al., 2019).

Procedure

The measuring tool was The Youth 2018 questionnaire by Icelandic Center for Social Research and analysis (ICSRA) which included 83 questions on 30 pages. The questionnaire was submitted in 2018 to all elementary students in 8th, 9th and 10th grade in Iceland and those who attended school participated if their guardians had not protested it. The teachers submitted the survey to the students according to the instructions that ISCRA had given. The students were made aware that it was an anonymous survey so their answers could not be traced and that they could quit participation at any time. They were asked to answer the questionnaire conscientiously and ask the teachers for help if they had questions. Everyone took the survey in a classroom at their school. Afterward, the students were asked to put their paper in an unmarked envelope and hand them to their teacher.

The Youth questionnaire contains questions about the youths’ public health and well-being, education, social and leisure activities, sports, family structure and finances, bullying, substance use, and more. Social scientists make the questionnaires each year thus the validity and reliability are kept good. The measures used for this study were age and gender, active

and passive social media use, self-esteem, loneliness, social comparison orientation, general social media use, peer and parents' support, parents' financial standing, and family structure.

Data analysis

The independent variables were active and passive SMU. The dependent variables were gender, self-esteem, and loneliness and social comparison orientation is a mediator. IBM SPSS Statistics version 27 was used for data processing. Descriptive statistics was calculated to provide information about the difference in social media use of girls and boys. Pearson's Chi-square test of independence was used to test if there was a significant difference in loneliness between genders and Independent samples t-test was used to test the gender difference in active and passive SMU use, self-esteem, social comparison, and time spent on social media. Bivariate correlation was used to get information of Spearman correlation such as strengths and directions of the relations of the variables. Hierarchical linear regression was used to test the gender difference in the relationship between the independent variables, dependent variables, and mediation variable. Process tool version 3.5 by Andrew F. Hayes (Hayes, 2017) was used to test the direct and indirect effects of the independent variable on the dependent variables through the mediation variable.

Assumptions for Hierarchical linear regression were tested. The assumption for normality was not met where the dependent variables were not normally distributed, however, the residuals were normally distributed. The assumption for multicollinearity was met where all the predictors were multicollinear as well as the assumption of independent errors and therefore autocorrelation was not at hand.

Results

Descriptive statistics

To test the social media use of girls and boys, descriptive statistics were used. Table 1 shows that 34% of boys and 43% of girls used social media actively once or more daily.

Girls post more pictures or videos on social media than boys ($M_{girls} = 3.883$, $M_{boys} = 2.786$), $t(1907) = 14.163$, $p < .001$, where 22% of girls and 12% of boys reported posting daily. However, sending a private message, picture, or video that disappears after being seen was more common where 30% of boys and 40% of girls did it daily. Passive SMU seemed to be less common than active SMU where 7% of boys and 9% of girls reported observing their friends' pages or profiles daily and 6% of boys and 9% of girls observed profiles they don't know daily. Independent samples t-test indicated girls engaged more in both active ($M_{girls} = 4.539$, $M_{boys} = 3.881$), $t(1875) = 18.277$, $p < .001$, and passive SMU ($M_{girls} = 2.592$, $M_{boys} = 2.259$), $t(1891) = 15.669$, $p < .001$.

Correlations

Table 2 shows that both active and passive SMU was negatively correlated with self-esteem but positively correlated with loneliness and social comparison orientation. Passive SMU correlated stronger with loneliness and social comparison orientation while active SMU correlated a little stronger with self-esteem although the correlation was weak. Girls spent more time on social media ($M_{girls} = 4.501$, $M_{boys} = 3.528$), $t(1917) = 2.061$, $p < .001$, had lower self-esteem ($M_{girls} = 3.001$, $M_{boys} = 3.239$), $t(1880) = 22.832$, $p < .001$, experienced more loneliness, $X^2(1, N = 2.024) = 69.124$, $p < .001$ and compared themselves more to others than boys ($M_{girls} = 3.133$, $M_{boys} = 3.048$), $t(1877) = 0.080$, $p < .001$.

Both active and passive SMU positively correlated with time spent on social media. Parental and peer support positively correlated with active SMU, self-esteem and negatively correlated with loneliness. Financial standing correlated negatively with passive SMU but positively with active SMU, although both correlations were weak. It correlated negatively with self-esteem and parental and peer support but positively with loneliness, social comparison orientation and time spent on social media. Those who lived with both of their

parents correlated negatively with both active and passive SMU, loneliness, and social comparison orientation but positively with self-esteem.

Hierarchical linear regression

Hierarchical linear regression was used to test if passive SMU was a significant predictor of self-esteem and loneliness, and also to see if there was a significant mediation effect of social comparison orientation. Figure 1 shows that in the first model, passive SMU predicted social comparison orientation ($b = 0.076$, 95% CI [0.062, 0.092], $t = 10.075$, $p < .001$), and self-esteem ($b = -0.025$, 95% CI [-0.045, -0.006], $t = -2.539$, $p < 0.05$), and social comparison orientation predicted self-esteem ($b = -0.216$, 95% CI [-0.276, -0.156], $t = -7.055$, $p < .001$). There was a significant mediation effect of social comparison orientation on passive SMU and self-esteem. Therefore, the relationship between passive SMU and self-esteem decreased after social comparison orientation was added in the model.

Figure 1

Mediating Effect of Social Comparison Orientation on the Relationship Between Passive SMU and Self-Esteem

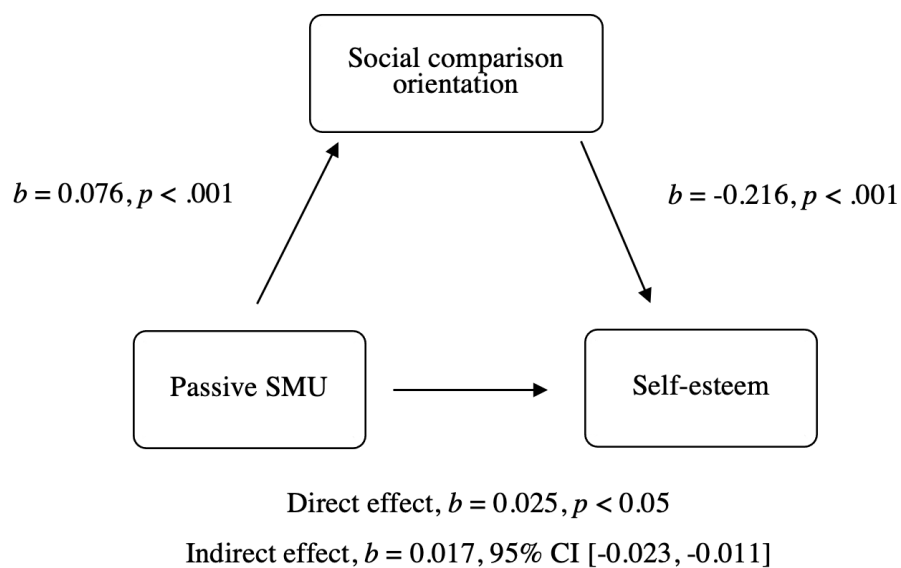


Figure 2 shows that in the second model, passive SMU predicted social comparison orientation ($b = 0.076$, 95% CI [0.061, 0.091], $t = 10.218$, $p < .001$), and loneliness ($b =$

0.059, 95% CI [0.031, 0.088], $t = 4.101$, $p < .001$), and social comparison orientation predicted loneliness ($b = 0.251$, 95% CI [0.164, 0.339], $t = 5.619$, $p < .001$). There was a significant mediation effect of social comparison orientation on passive SMU and loneliness. Therefore, the relationship between passive SMU and loneliness decreased after social comparison orientation was added in the model.

Figure 2

Mediating Effect of Social Comparison Orientation on the Relationship Between Passive SMU and Loneliness

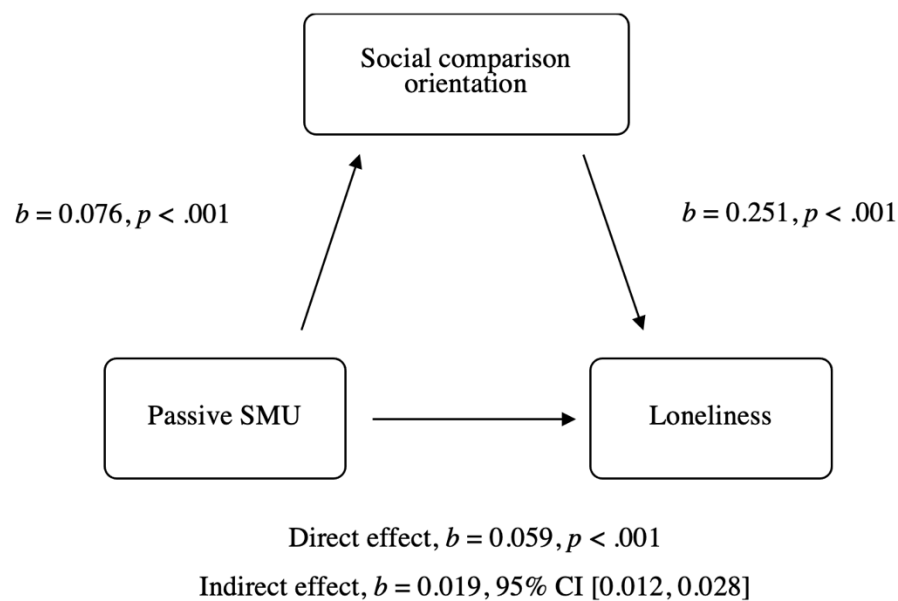


Table 3 shows that passive SMU did not significantly relate to boys' self-esteem but did to social comparison orientation. The relationship between passive SMU and social comparison orientation was positive. For girls, passive SMU significantly related positively to both self-esteem and social comparison orientation. When social comparison orientation was taken into account the relationship between passive SMU and self-esteem stayed non-significant for boys but stayed significant for girls. Social comparison orientation significantly mediated the relationship between passive SMU and self-esteem for girls but not for boys. Therefore, for girls, the social comparison orientation was a partial mediator of the relationship between passive SMU and self-esteem.

Table 4 shows that passive SMU significantly related positively to loneliness and social comparison orientation for both boys and girls. When social comparison orientation was taken into account the relationship between passive SMU and loneliness stayed significant for both genders. Therefore, for both girls and boys, the social comparison orientation was a partial mediator of the relationship between passive SMU and loneliness.

Table 3

Linear Regression of Passive SMU, Self-Esteem, Social Comparison Orientation, and Gender

Gender	Independent variable	Dependent variable	R^2	B	Std. Error	β	P
Boys	Passive SMU			0.008	0.013	0.020	0.565
	(Constant)	Self-esteem	0.1%	3.229	0.037		< .001
	Passive SMU			0.058	0.012	0.169	< .001
	(Constant)	Social comparison orientation	7.5%	2.917	0.032		< .001
	Passive SMU		1.4%	0.007	0.014	0.018	0.614
	Social comparison orientation			-0.076	0.040	-0.067	0.060
Girls	(Constant)	Self-esteem		3.371	0.124		< .001
	Passive SMU			-0.063	0.013	-0.154	< .001
	(Constant)	Self-esteem	11.5%	3.172	0.042		< .001
	Passive SMU			0.089	0.010	0.287	< .001
	(Constant)	Social comparison orientation	22.8%	2.904	0.031		< .001
	Passive SMU		37.9%	-0.036	0.014	-0.089	0.008
Social comparison orientation			-0.326	0.045	-0.246	< .001	
(Constant)	Self-esteem		4.133	0.136		< .001	

Note. R^2 = Variance; B = Unstandardized Beta; β = Standardized Beta; p = Significance level.

Table 4*Linear Regression of Passive SMU, Loneliness, Social Comparison Orientation, and Gender*

Gender	Independent variable	Dependent variable	R^2	B	Std. Error	β	P
Boys	Passive SMU			0.062	0.019	0.108	< .001
	(Constant)	Loneliness	9.1%	1.459	0.052		< .001
	Passive SMU			0.186	0.054	0.113	< .001
	(Constant)	Social comparison orientation	9.7%	1.027	0.168		< .001
Boys	Passive SMU		14.1%	0.053	0.020	0.093	0.007
	Social comparison orientation			0.151	0.058	0.090	0.009
	(Constant)	Loneliness		1.025	0.177		< .001
Girls	Passive SMU			0.071	0.020	0.114	< .001
	(Constant)	Loneliness	14.9%	1.777	0.062		< .001
	Passive SMU			0.354	0.063	0.178	< .001
	(Constant)	Social comparison orientation	36.0%	0.848	0.202		< .001
Girls	Passive SMU		43.8%	0.048	0.021	0.079	0.020
	Social comparison orientation			0.324	0.067	0.163	< .001
	(Constant)	Loneliness		0.810	0.205		< .001

Note. R^2 = Variance; B = Unstandardized Beta; β = Standardized Beta; p = Significance level.

Table 1*Frequencies of Active and Passive Social Media Use for Girls and Boys*

	Never		1x month or less		1x a week		Few times a week		1x a day		2-5x a day		6x a day or more	
	Boys (%)	Girls (%)	Boys (%)	Girls (%)	Boys (%)	Girls (%)	Boys (%)	Girls (%)	Boys (%)	Girls (%)	Boys (%)	Girls (%)	Boys (%)	Girls (%)
Active social media use														
How often do you chat or send a private message, a picture, or a video?	4.9	1.6	2.7	1.5	1.7	1.1	5.5	4.3	4.9	3.1	10.2	12.5	19.2	26.9
How often do you send a private message, a picture, or a video which disappears after being seen?	9.2	4.7	2.5	1.2	1.8	1.5	5.3	3.4	5.8	3.9	8.0	10.5	16.3	25.8
How often do you post a picture or a video of your life?	22.3	12.0	7.4	6.8	2.9	4.8	4.1	5.3	4.3	5.0	3.5	7.4	4.6	9.5
How often do you share something else than pictures, for example, news, games, or websites?	20.0	22.1	7.5	10.5	4.8	4.2	7.0	5.0	3.9	3.7	3.1	2.9	2.7	2.6
Passive social media use														
How often do you observe your friends' pages or profiles?	23.9	21.4	7.2	7.1	4.9	5.6	5.9	8.0	3.2	3.6	2.3	3.4	1.7	1.8
How often do you observe pages or profiles from people you don't know?	28.9	25.4	6.1	6.1	3.5	3.9	4.5	6.8	2.4	3.3	2.2	3.3	1.4	2.2

Table 2*Spearman Correlations Between Variables*

	Active SMU	Passive SMU	Gender	Self-esteem	Loneliness	Social comparison orientation	Time on social media	Parental support	Peer support	Financial standing	Family structure
Active SMU	.	0.485**	0.200*	-0.065**	0.052*	0.226**	0.520**	0.059*	0.219**	0.007	-0.049*
Passive SMU		.	0.095*	-0.057*	0.111**	0.245**	0.293**	-0.015	0.104**	-0.006	-0.035*
Gender			.	-0.161**	0.183**	0.077**	0.257**	0.050*	0.252**	0.137**	0.018
Self-esteem				.	-0.517**	-0.208**	-0.218**	0.475**	0.301**	-0.177**	0.142**
Loneliness					.	-0.166**	0.143**	-0.300**	-0.278**	0.142**	-0.087**
Social comparison orientation						.	0.158**	-0.100**	0.014	0.033	-0.030
Time on social media							.	-0.064**	0.130**	0.055*	-0.105**
Parental support								.	0.393**	-0.170**	-0.192**
Peer support									.	-0.088**	0.077**
Financial standing										.	-0.179**
Family structure											.

Note. *p < 0.5, **p < 0.001

Discussion

The aim of this study was to assess the mediating role of social comparison in active and passive SMU and the relationship with self-esteem and loneliness in adolescents as well as look into gender differences. The first hypothesis was that active SMU is positively related to self-esteem, however, this hypothesis was not supported where it was negatively related to self-esteem. Therefore, active SMU related to decreased self-esteem. Nonetheless, previous studies have shown that those who engage in active SMU have higher self-esteem compared to those who engage in passive SMU (Gonzales & Hancock, 2010; Steinsbekk et al., 2020).

The second hypothesis was that active SMU is negatively related to loneliness, this hypothesis was also not supported where active SMU was positively related to loneliness. Therefore, active SMU related to increased loneliness. That being said, this study does not show similar results as previous studies that have shown that general and active SMU relate to decreased loneliness (Pittman, 2015; Pittman, 2018; Yang, 2016). The third hypothesis was that passive SMU is positively related to social comparison orientation and was supported. Therefore, passive SMU related to increased social comparison orientation, which is consistent with Burnell's and colleagues' (2019) findings.

The fourth hypothesis was that social comparison orientation mediates the relationship between passive SMU and self-esteem. The hypothesis was supported where there was a significant mediation effect of social comparison orientation on passive SMU and self-esteem. Therefore the relationship between passive SMU and self-esteem was partly explained by social comparison orientation. This is consistent with previous studies that have shown mediation effect of social comparison orientation on the relationship between passive SMU and self-esteem. In addition, the relationship between general SMU and self-esteem has been shown to be mediated by USC (Vogel et al., 2014; Vogel et al., 2015).

The fifth hypothesis was that social comparison orientation mediates the relationship between passive SMU and loneliness. This hypothesis was supported where there was a significant mediation effect of social comparison orientation on passive SMU and loneliness. Therefore the relationship between passive SMU and loneliness was partly explained by social comparison orientation. This is consistent with Yang's (2016) findings which indicated that active SMU was related to decreased loneliness for those with low social comparison orientation (Yang, 2016).

The results indicated that girls spent more time on social media and engaged more in both active and passive SMU than boys which is similar to previous findings (Andreassen et al., 2016; Hawi & Samaha, 2017). Girls appeared to have lower self-esteem and compared themselves more to others than boys which consistent with previous findings (Denti et al., 2012; Krasnova et al., 2013; Steinsbekk et al., 2020; Thorisdottir et al., 2019; Vogel et al., 2014). Passive SMU did not significantly relate to boys' self-esteem but did to loneliness and social comparison orientation. For girls, passive SMU significantly related to their self-esteem, loneliness, and social comparison orientation.

In conclusion, in this study the hypothesis about passive SMU were supported while the hypothesis for active SMU were not where both active and passive SMU related to decreased self-esteem and increased loneliness and social comparison orientation which suggests less difference between these types of SMU concerning these variables than expected. Because of the similar outcomes of active and passive SMU in this study, it can be assumed that SMU as a whole may be related to decreased self-esteem and increased loneliness and social comparison. Despite that, social comparison orientation appears to partly control these relationships. In addition, SMU between genders turned out to be different as well as its relationships. The study therefore supports that active and passive

SMU relates to self-esteem, loneliness and social comparison and that girls may be more vulnerable to social media use.

The study had some strengths including the randomized and large sample size which allows the results to represent the Icelandic adolescent population. In addition, the gender ratio was equal which allows the study to determine gender differences. Although, this study's findings have to be seen in the light of some limitations. The first one is that all the variables were based on self-reports and therefore could be some biases in the self-evaluation. Hunt and his colleagues (2018) have for example shown that self-reports on SMU do not reflect actual usage which is therefore good to keep in mind when interpreting the findings. The second one is that social comparison is a complex variable in regard to social media. People can engage in different types of social comparisons, for example, USC and DSC, but they appear to have different effects on self-esteem. USC has been shown to mediate this relationship and girls seem to engage more in USC than boys.

Future research should therefore consider studying the mediating role of different social comparisons (USC and DSC) in passive and active SMU and the relationship with self-esteem, loneliness, and gender where different age groups could be compared. There is a lack of longitudinal research on youths in active and passive SMU and its effects on self-esteem, loneliness, and the development of social comparison orientation. Lastly, there is a serious lack of experimental studies on this subject where causal relationships could be determined.

This study will hopefully offer more information about active and passive social media use where it is quite a new topic, especially to the public. Including offering information about the role of social comparison orientation in social media use among adolescents and how loneliness and self-esteem are important factors in the usage. Thus, parents, teachers, and other children's caregivers may utilize this information to inform their

adolescents about different social media use and the relations to different factors which hopefully will influence the social media use of adolescent's.

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