



## UvA-DARE (Digital Academic Repository)

### The impact of seeing and posting photos on mental health and body satisfaction

*A panel study among Dutch and Japanese adolescents*

Bij de Vaate, N.A.J.D.; Veldhuis, J.; Konijn, E.A.

**DOI**

[10.1016/j.chb.2023.107906](https://doi.org/10.1016/j.chb.2023.107906)

**Publication date**

2023

**Document Version**

Final published version

**Published in**

Computers in Human Behavior

**License**

CC BY

[Link to publication](#)

**Citation for published version (APA):**

Bij de Vaate, N. A. J. D., Veldhuis, J., & Konijn, E. A. (2023). The impact of seeing and posting photos on mental health and body satisfaction: A panel study among Dutch and Japanese adolescents. *Computers in Human Behavior*, 148, Article 107906. Advance online publication. <https://doi.org/10.1016/j.chb.2023.107906>

**General rights**

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

**Disclaimer/Complaints regulations**

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.



## The impact of seeing and posting photos on mental health and body satisfaction: A panel study among Dutch and Japanese adolescents<sup>☆</sup>

Nadia A.J.D. Bij de Vaate<sup>a,b,\*</sup>, Jolanda Veldhuis<sup>b</sup>, Elly A. Konijn<sup>b</sup>

<sup>a</sup> Amsterdam School of Communication Research, University of Amsterdam, the Netherlands

<sup>b</sup> Department of Communication Science (Media Psychology Program), Vrije Universiteit Amsterdam, the Netherlands

### ARTICLE INFO

Handling Editor: Shuhua Zhou

#### Keywords:

Social media  
Self-presentation  
Passive social media use  
Active social media use  
Longitudinal  
Cross-national

### ABSTRACT

A vivid scholarly debate addresses the extent to which social media usage is detrimental for adolescents' mental health and body satisfaction. The current study aims to advance the debate in three ways: (1) we differentiate between different types of active and passive social media use (i.e., authentic vs. edited content), (2) we examine both between- and within-person results, and (3) we take a cross-national approach. Therefore, a three-wave panel study was conducted among 987 adolescents in Japan ( $N = 433$ ) and the Netherlands ( $N = 554$ ) to longitudinally investigate the relationships between active visual self-presentation, passive exposures thereto, and mental health and body satisfaction. Between-person results generally indicate that, regardless of being active or passive, both creating or seeing *authentic* content can be associated with increases in mental health and body satisfaction. Contrary, both creating and seeing *edited* content can coincide with reduced levels of mental health and body satisfaction. Nevertheless, the results should be seen in light of differences in between- and (lagged) within-person processes as well as cross-country differences. In all, evidence exemplifies the need for a communication-centered approach specifying content heterogeneity, showcases differences in between- and within-person effects, and demonstrates cross-national differential susceptibility to media effects.

Research on how new media technologies shape and change the way individuals feel and behave has been of interest since decades (e.g., Kraut et al., 1998, 2002; Orben, 2020a). Whether it is about radio, television, or the rise of the internet, widespread concerns regarding the possible effects on young people recurs (Orben, 2020a; Wartella & Jennings, 2000; Wartella & Reeves, 1985). Currently, scholarly attention has been drawn to the possible detrimental effects of digital media and use of social media on mental health and body image. These widespread concerns have led to accumulation of research that has been synthesized in many systematic reviews and meta-analyses, though, with mixed results (Best et al., 2014; McCrae, 2017; Orben, 2020b; Sarmiento et al., 2020). Consequently, a vivid debate on whether or not use of digital media, including social media, has a detrimental effect on adolescents' mental health and body image has arisen (Holland & Tiggemann, 2016; Orben & Przybylski, 2019; Twenge, 2020). Especially for adolescents who are growing up in a social media saturated environment, more thoroughly understanding the conditions under which social media use (SMU) impacts adolescents' mental health and body image

represents an important challenge to further the debate. In the current study we aim to further unravel social media effects by contributing to existing literature in three ways by 1) taking a communication-centered approach, 2) differentiating between-person from within-person results, and 3) take a dual country approach.

First of all, previous studies into social media effects largely focused on a channel-centered approach (Meier & Reinecke, 2020). That is, studies specifically focused on investigations of 'screen time' on social media, largely ignoring the different behaviors and activities taking place (e.g., Appel et al., 2020; Orben, 2020b; Saiphoo & Vahedi, 2019; Valkenburg, 2022; Vannucci & McCauley Ohannessian, 2019). Without differentiating into more specific behaviors or activities on social media, it is difficult to examine under which conditions associations with mental health and body image apply (Bij de Vaate et al., 2020; Orben, 2020b; Vandenbosch et al., 2022). Second, to the best of our knowledge, previous studies were most often cross-sectional in nature (e.g., Appel et al., 2020; Bij de Vaate et al., 2020; Parry et al., 2022; Saiphoo & Vahedi, 2019). This means that, thus far, studies mainly looked into

<sup>☆</sup> This research is funded by the Netherlands Organisation of Scientific Research (NWO Research Talent grant 406.17.546, [www.nwo.nl](http://www.nwo.nl)). We have no known conflict of interest to disclose.

\* Corresponding author. Department of Communication Science, Universiteit van Amsterdam, Nieuwe Achtergracht 166, 1018 WV, Amsterdam, the Netherlands.  
E-mail address: [a.j.d.bijdevaate@uva.nl](mailto:a.j.d.bijdevaate@uva.nl) (N.A.J.D. Bij de Vaate).

<https://doi.org/10.1016/j.chb.2023.107906>

Received 10 June 2022; Received in revised form 31 March 2023; Accepted 2 August 2023

Available online 9 August 2023

0747-5632/© 2023 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

social media effects from a between-person perspective (Molenaar, 2004). Results of between-person studies, however, cannot make inferences about individual changes in mental health and body image following individual changes in SMU. Third, to date, most studies concentrated on single-country results. Comparing results from single-country studies is difficult due to, for example, plurality in conceptualizations and operationalizations of variables (Bij de Vaate et al., 2020; Petropoulos Petalas et al., 2021). As a result, it remains unclear whether social media effects align or differ across countries.

The current study addresses these gaps by investigating both longitudinally and cross-nationally how specific types of SMU relate to adolescents' mental health and body image. The next sections will discuss the importance of differentiating types of SMU, the need for a long-term perspective, as well as a cross-national comparison. To this end, this study aims to further elaborate to which extent content-specific SMU is related to mental health and body image.

## 1. Social media usage, mental health and body satisfaction

Thus far, a vivid scholarly community aimed to unravel to which extent SMU has positive or negative outcomes for adolescents' mental health and body image (also see the following recent overviews; Kross et al., 2021; Valkenburg, 2022; Vandebosch et al., 2022). The mixed results of social media effects research emphasize that unraveling such effects are highly complex and nuanced. That is, social media use in itself is a complex construct as is evident from its evolving definitions and understandings, and, consequently also faces measurement challenges (Ellison et al., 2022; Petropoulos Petalas et al., 2021). Since the rise of social media, most research operationalized SMU as a monolithic measure of time spent on social media. However, the accumulative results from research on social media effects on mental health and body image thus far have been inconclusive (Appel et al., 2020; Valkenburg et al., 2022). At this point, scholars generally acknowledge that it is time to move away from such monolithic measures: Time-based predictors are argued to be too coarse to unravel meaningful relationships with mental health and body image indicators, as they do not provide information on how social media is used. To that end, scholars have shifted towards more user-centered measures, that place more emphasis on how and why individuals use social media (cf. Meier & Reinecke, 2021). From there, social media use is often distinguished into active and passive SMU. In general, "passive SMU", characterized by observing, scrolling, and viewing social media content, is hypothesized to coincide with *decreases* in mental health. Contrary, "active SMU", typically characterized by posting and creating social media content, is predicted to coincide with *increases* in mental health (Dienlin & Johannes, 2020; Verduyn et al., 2017).

Recent studies, however, suggest that there is limited support for the active-passive hypotheses (Bij de Vaate et al., 2020; Valkenburg et al., 2022). One of the reasons for the inconsistent results for active and passive SMU is that they can include heterogeneous content, ranging from, for example, authentic to idealized content. The various types of content one creates or sees can have a differential association with mental health and body image. Hence, we propose the active-passive dichotomy should be further refined by specifying the content of the created or seen post. Therefore, this study specifies content heterogeneity of SMU referring to either self-effects (i.e., effects of messages of the creators themselves on their own mental health and body satisfaction) or recipient effects (i.e., effects of *others'* messages on recipients' mental health and body satisfaction).

### 1.1. Social media content heterogeneity and mental health and body satisfaction

For both active or passive social media use the types of content individuals actively post or passively consume can cover a wide variety of content, possibly also with contradicting outcomes for mental health

and body image. Such contradicting outcomes have been previously found when differentiating between edited (i.e., inauthentic or idealized content) in comparison to authentic or unedited content on social media (cf. Cohen et al., 2018; Twomey & O'Reilly, 2017). Looking at self-effects, actively edited, inauthentic or idealized self-presentations have been systematically shown to relate to negative outcomes for an individual's self-concept such as lowered self-esteem or body image (Mills et al., 2018; Tiggemann et al., 2020; Twomey & O'Reilly, 2017). Contrary, creating authentic self-presentations were found to induce positive outcomes for an individual's self-concept such as increased life satisfaction and psychological well-being or reduced stress levels (Bailey et al., 2020; Grieve & Watkinson, 2016; Reinecke & Trepte, 2014; Twomey & O'Reilly, 2017). Results of the latter studies are consistent with the expectations from the self-discrepancy theory (Higgins, 1987), where small discrepancies between the actual and ought for self would foster positive feelings about oneself as opposed to larger discrepancies that increase negative feelings about oneself. Hence, authentic self-presentations are seemingly triggering little discrepancies between online and offline self, whereas edited self-presentations create larger discrepancies between the online and offline self.

Similarly, recipient effects of *passive* exposures to social media posts of others also show different outcomes based on the content specification. For example, seeing authentic visual self-presentations of others coincided with higher levels of mental health and body image (Bij de Vaate et al., 2021). Seeing edited or idealized self-presentations of others, however, is typically associated with decreased body image (Kim & Park, 2016; Kleemans et al., 2018; Politte-Corn & Fardouly, 2020). We must note, however, that in certain cases seeing idealized content also facilitates positive outcomes that may be explained by inspiration, as supported by recent studies (Bij de Vaate et al., 2021; Meier et al., 2020). Nevertheless, passive exposure to others' idealized or positive self-presentations has been repeatedly found to reduce mental health, specifically triggered by upward comparisons or envy (e.g., Appel et al., 2016; Sherlock & Wagstaff, 2019). Generally, these results align with the presumptions of the Social Comparison Theory (Festinger, 1954), where upward comparisons are expected to reduce levels of mental health and body image and downward comparisons to increase levels of mental health and body image.

Taken together, results of previous studies indicate that, contrary to the expectations of the active-passive dichotomy, it is not about being active or passive on social media, but rather the content one creates or sees that determines the potential associations with mental health and body image. To examine the importance of specifying content heterogeneity we compare authentic content with edited content on self-effects as well as on recipient effects. We specifically focus on content heterogeneity in photos (i.e., visual self-presentations) as photo-sharing social media platforms, such as Instagram, have become increasingly popular (Statista, 2022). Additionally, we differentiate within- and between-person processes. A within-person approach is important as applying findings from the between level (also referred to as group or inter-individual level) to interpret within-person changes may result in an error of inference (Curran & Bauer, 2011; Hamaker et al., 2015). That is, between-person processes may differ from within-person processes. Between-person correlations (i.e., inter-individual correlations) examine the extent to which content-specific SMU relates to mental health and body image relative to the group mean. Within-person correlations (i.e., intra-individual correlations) examine the extent to which deviations from one's overall score of content-specific SMU relate to deviations from one's overall score on mental health and body satisfaction. Put differently, within-person relations observe how aberrations from one's usual SMU behaviors can be linked to aberrations from one's usual mental health and body satisfaction. In line with the majority of prior research and theoretical assumptions, we propose the following between-person and within-person hypotheses.

**Hypothesis 1a.** Frequency of creating and seeing authentic visual self-

presentations are positively related to mental health and body satisfaction (between-person correlation).

**Hypothesis 1b.** Frequency of creating and seeing edited visual self-presentations are negatively related to mental health and body satisfaction (between-person correlation).

**Hypothesis 2a.** Adolescents with higher levels of creating and seeing authentic visual self-presentations than usual will experience higher levels of mental health and body satisfaction than usual (within-person correlation of deviations).

**Hypothesis 2b.** Adolescents with higher levels of creating and seeing edited visual self-presentation than usual will experience lower levels of mental health and body satisfaction than usual (within-person correlation of deviations).

### 1.2. Potential lasting effects of SMU

Social media effects research primarily studied short-term effects of SMU on mental health and body image, however, the potential lasting effects remain understudied. To assess social media effects, we need to study whether an individual's change in SMU precedes or follows an individual's change in mental health and body image. Hence, to unravel a potential lasting effect of content-specific SMU on mental health and body image we particularly aim to examine the lagged within-person effects. To the best of our knowledge, no panel studies thus far have been looking into the (lagged) within-person effects of content heterogeneity regarding self- and recipient-effects of SMU.

A few recent studies have examined the (lagged) within-person associations of general SMU and mental health (Boers et al., 2019; Coyne et al., 2020; Jensen et al., 2019; Orben et al., 2019; Schemer et al., 2020), focusing on for example time spent on social media instead of content heterogeneity. Time spent on social media has been found to have a (very) small negative lagged within-person association with mental health (i.e., decreases in life satisfaction, increases in depressive symptoms; Boers et al., 2019; Orben et al., 2019). However, also non-significant within-person associations have been found by recent panel studies (Coyne et al., 2020; Jensen et al., 2019; Schemer et al., 2020). These inconsistent findings might be due to adolescents' unique susceptibility to media effects (Beyens et al., 2020). This study found that the association between passive SMU and well-being strongly differed across adolescents, with some adolescents feeling worse, some felt better, and others were unaffected. Alternatively, channel-centered approaches may also lead to inconsistent results for longitudinal studies – just like for cross-sectional studies – as merely measuring screentime represents and oversimplification of the various behaviors taking place. Hence, the variation in created and seen content on social media could further provide an alternative explanation for the inconsistent findings.

To underline the importance of specifying the variation in type of content one creates or sees, previous panel studies on the long-term effects of SMU on mental health and body image at the between-level perspective provide initial insights. For example, mixed evidence was found for the long-term between person impact of *active* SMU, ranging from negative, positive to insignificant outcomes for mental health (Wang et al., 2018a, 2018b). Therefore, specifying the content type of active self-presentation might help to better understand the direction of the potential outcomes. For example, higher levels of editing a selfie was found to be associated with more appearance concerns 6 months later (Wang et al., 2019), whereas, authentic self-presentation was found to increase subjective well-being (Reinecke & Trepte, 2014). These studies, however, differ in the mental health or body image indicators studied and only examined between-person effects. Nevertheless, results indicate that the potential long-term effects of active SMU might be more accurately studied if the type of content is specified.

Long-term effects of *passive* SMU in general seemed to be inducing negative effects on mental health and body image. For example, higher

levels of passive SMU at T1 predicted decreased subjective well-being at T2 (Stevic et al., 2019; Wang et al., 2018a). Similarly, higher levels of selfie-viewing at T1 was related to more appearance related concerns at T2 (Wang et al., 2019). Although these studies are in line with the general idea that passive SMU decreases mental health and body image, specifying the content more clearly might give a more accurate representation of the expected outcomes. Instances can be envisioned in which passively engaging could also be less detrimental. That is, exposure to natural no make-up selfies were found to be less detrimental to an individual's body image than idealized selfies (Politte-Corn & Fardouly, 2020). Similarly, passive exposure to authentic self-presentations was found to increase both mental health as well as body image (Bij de Vaate et al., 2021).

In all, previous studies confirm the potential lasting effects of SMU on mental health and body image. To further the debate on social media effects and increase understandings of mixed social media effects findings, we need to further unravel both between- and within-person effects, and specifically address content heterogeneity of social media visuals.

**RQ1.** Do changes in the frequency of creating online visual self-presentations or viewing visual self-presentations of others (i.e., authentic and edited) affect mental health and body satisfaction one month later (time-lagged *within-person* correlation of deviations)?

### 1.3. Cross-national comparison

Thus far, studies examining how SMU coincides with mental health and body image mainly rely on single country results (Bij de Vaate et al., 2020; Huang, 2017). Since single country studies rely on different conceptualizations and operationalizations of SMU and mental health or body image indicators (Bij de Vaate et al., 2020), making valid cross-country comparisons is difficult. When comparisons are ought to be made at the country-level, scholars often apply Hofstede's paradigm of national culture (Hofstede, 2001; Odağ & Hanke, 2019). Hofstede's paradigm distinguishes various dimensions in which national contexts can vary. The dimensions of 'individualism-collectivism' and 'uncertainty avoidance' have often been applied to explain differences in SMU in varying national contexts (cf. Bij de Vaate et al., 2020; Liu et al., 2018). In brief, countries varying on the dimension individualism-collectivism differ in the extent to which members place emphasis on the individual being more self-centered, contrasted to being connected to the social context. Countries varying on the dimension uncertainty avoidance differ in the degree to which they try to avoid uncertain and ambiguous situations, such as disclosing information about oneself online (Gudykunst, 1997; Hofstede, 2001). On the one hand, due to differences in national contexts and diversification of audiences, social media effects may not be uniform across countries. On the other hand, due to globalization and individuals becoming more tech-savvy, it can be questioned that social media effects may be more generalizable (Jenkins, 2006; Liu et al., 2018).

Previous studies argue that associations between SMU and mental health may depend on the national context (Bij de Vaate et al., 2020; Boer et al., 2020). A recent study on problematic and intense SMU indicated that associations between types of SMU and mental health indicators varied between countries (Boer et al., 2020). For example, intense social media users reported more psychological complaints than the non-intense users, but this finding was not consistent for each country. Similarly, it has been shown that retrospective self-reports of online engagement are related to higher mental health only in Ireland and the United Kingdom, but not in the United States (Orben & Przybylski, 2019). Hence, results of these studies would suggest differential susceptibility of media effects at the national country level. Nevertheless, similar patterns across countries have also been found. For example, the direction of the associations between social media use and self-esteem, and psychological well-being were largely similar between

United States participants and South Korean participants (Lee et al., 2014).

Regarding body image, results of several meta-analyses indicated that the influence of traditional media on body image is similar across national cultures (e.g., Grabe et al., 2008; Mingoia et al., 2017). However, studies included in these meta-analyses could be considered as having relatively similar national cultural values (i.e., all countries scoring higher on individualism, and relatively low on uncertainty avoidance). Recently, it has been argued that the influence of SMU on body image may also depend on the national context. For example, associations between mass-media use, self-objectification, and positive body image were found to differ per country (Karsay et al., 2020). This study found a direct association between Instagram use and positive body image in South Korea, whereas such a link was absent for Austria, Belgium, and Spain. Similarly, effect sizes of the association between SMU and body image disturbance differed per geographical study-area, where highest effect sizes were found in Australia and the lowest were found in Asia (Saiphoo & Vahedi, 2019). However, even though the strength of the association between SMU and body image disturbance differed, the direction of the associations was found to be similar (i.e., positive). This aligns with a previous study which found that the direction of the association between social media use and body image was similar for the United States and South Korea (Lee et al., 2014).

In all, further research is needed to understand the role of national contexts in studying social media effects. Therefore, the current study examines whether social media usage and its potential outcomes differ across two countries: Japan and the Netherlands. According to Hofstede's paradigm these two countries vary with respect to the dimensions of individualism-collectivism and uncertainty avoidance. More specifically, with Japan being relatively low in individualism and high in uncertainty avoidance as opposed to the Netherlands which scores higher on individualism and lower in uncertainty avoidance. Note, however, that we acknowledge that the utility of Hofstede's dimensions of national culture has been criticized (Baskerville, 2003; McSweeney, 2002; Voronov & Singer, 2002). Even though support has been found that within-country regions still aligned with the values as expected based on the national context (Minkov & Hofstede, 2012), differences within countries may also exist. Likewise, the countries included in our current study also differ with respect to other aspects, such as language and the social media platforms available. However, empirical studies that apply a cross-national design is scarce. Hence, comparing patterns of SMU and its potential outcomes across these two countries, will provide relevant information on the role of national context in studying social media effects.

**RQ2.** To what extent are the patterns examined in our previous hypotheses and research question argued for in the above, similar or different across the two countries (i.e., Japan, the Netherlands)?

## 2. Method

### 2.1. Procedure and participants

The data have been collected via three online surveys by a renowned data-collection company. The target group of this study included adolescents aged between 12 and 18 years old. Parental consent was acquired via the data-collection company following standardized procedures, adolescent participant consent was actively acquired in wave 1. Data were collected in May, June, and July, with intervals of 1 month each in 2021. Each participant has been given a unique ID only known by the data-collection company, and received an additional respondent ID per wave. For each wave of data collection, the unique ID and respondent ID were matched by the data-collection company. Participants were removed from analyses if they did not take part in all waves, indicated to not have an account on social media, did not complete IV's and DV's of the study, and did not meet the attention check

criteria. The final sample included 554 Dutch participants (56.7% female,  $M_{age} = 15.28$ ,  $SD_{age} = 1.87$ ) and 433 Japanese participants (75.3% female,  $M_{age} = 16.05$ ,  $SD_{age} = 1.35$ ; See Table S1 for participant details per wave). Participants were recruited to be equally distributed across gender, age, educational attainment, and socio-economic status. However, the intensity of the study and recruitment through parental consent as well as adolescent consent inhibits representativeness of the sample, as also shown by skewed distribution of gender in the Japanese sample.

The effect size of the current study is based on a comparable study including associations between various types of active self-presentation, passive exposures and mental health and body image (Bij de Vaate et al., 2021), setting the current smallest effect size of interest (SESOI) at  $\beta = 0.15$  (standardized coefficients above 0.15). An a priori power analysis in R via the 'pwr' package was conducted to compute the required sample size for this study. Results of a pwr. r.test with an error probability of 5%, desired power of 80%, and SESOI of  $\beta = 0.15$ , calculated a minimum sample size of 345 participants per country.

### 2.2. Measures

All measures were answered on 11-point rating scales (1 = *totally disagree*, 11 = *totally agree*), unless otherwise reported. An 11-point scale was chosen as it would increase sensitivity and is closest to the normal distribution (Cummins & Gullone, 2000; Leung, 2011). Higher scores indicate higher levels of each measure. All measures were tested for factorial validity using a confirmatory factor analysis (CFA). Per construct, all items of each wave were included in the CFA. To account for longitudinal and multigroup (i.e., countries) measurement invariance, factor loadings of each item were constrained to be equal among the two groups and constrained to be equal across waves. Constrained and unconstrained models were compared using  $\Delta CFI$ , as indicator of measurement invariance. A  $\Delta CFI$  less than .01 indicates invariance (Cheung & Rensvold, 2002; Meade et al., 2008). Multigroup factorial invariance was not established for the two-dimensional factor of active self-presentation, suggesting that this factor could have a different meaning across Dutch and Japanese adolescents. For all other factors, results of the  $\Delta CFI$  comparisons indicated longitudinal factorial invariance as well as multigroup (i.e., country) factorial invariance. Hence, these constructs were invariant over time and allow for valid comparisons across groups. An overview of all measurement instruments for this study can be found on OSF (<https://osf.io/pkhdj/>).

**Types of active SMU.** Active visual online self-presentation was measured via two content-types: (1) *authentic* self-presentations, (2) *edited* self-presentations. Participants were asked to rate how often they posted these types of photos on social media, such as Instagram. *Authentic* self-presentation was measured via six items of a modified version of the social media self-presentation scale, revised self-disclosure scale, and the Self-Presentation-on-Facebook-Questionnaire (Michikyan et al., 2015; Wheelless, 1976, Wheelless, 1978; Yang and Brown, 2016). A sample item of the authentic self-presentation scale is "I post photos of myself online that are similar to who I am offline". Reliability of authentic self-presentation was high (JP:  $\omega_{t1} = 0.92$ ,  $\omega_{t2} = 0.95$ ,  $\omega_{t3} = 0.94$ ; NL:  $\omega_{t1} = 0.99$ ,  $\omega_{t2} = 0.99$ ,  $\omega_{t3} = 0.99$ ). *Edited* self-presentation was measured with six items based on previous photo editing scales (Chua & Chang, 2016; Fox & Rooney, 2015; McLean et al., 2015). A sample item of the edited self-presentation scale is "I have posted photos of myself, to which I've enhanced coloring". The item "I have posted photos of myself, where I made specific body parts look larger or smaller" has been deleted due to low factor loading on the latent variable. Indicators of edited self-presentation showed high reliability (JP:  $\omega_{t1} = 0.91$ ,  $\omega_{t2} = 0.93$ ,  $\omega_{t3} = 0.93$ ; NL:  $\omega_{t1} = 0.89$ ,  $\omega_{t2} = 0.90$ ,  $\omega_{t3} = 0.89$ ). Answering options ranged from never (1) to always (11). A CFA validated the two-factor structure of active *authentic* versus *edited* self-presentation, with a satisfactory fit ( $\chi^2/df = 3.20$ ;  $p < .001$ ; CFI = 0.95; TLI = 0.94; RMSEA = 0.07, 90% CI[0.064, 0.070]; SNMR =

0.05). The two-factor structure model performed significantly better than a one-factor structure solution ( $\chi^2(28) = 5154.6, p < .001$ ), supporting our assumed typology.

**Types of passive SMU.** In contrast to the types of active self-presentation, *passive* SMU was measured by examining the extent to which individuals were exposed to (1) *authentic* photos of others (JP:  $\omega_{t1} = 0.95, \omega_{t2} = 0.94, \omega_{t3} = 0.95$ ; NL:  $\omega_{t1} = 0.97, \omega_{t2} = 0.97, \omega_{t3} = 0.98$ ), and (2) *edited* photos of others (JP:  $\omega_{t1} = 0.94, \omega_{t2} = 0.95, \omega_{t3} = 0.94$ ; NL:  $\omega_{t1} = 0.92, \omega_{t2} = 0.93, \omega_{t3} = 0.94$ ; Chua & Chang, 2016; Fox & Rooney, 2015; McLean et al., 2015; Michikyan et al., 2015; Wheelless, 1976, 1978; Yang & Brown, 2016). Participants were asked to rate how often they saw these types of photos on social media, such as Instagram. Like edited self-presentation, the item “I have looked at photos of others of which I think specific body parts were made look larger or smaller” of passive exposure to edited photos of others has been dropped to improve factorial validity. The two-dimensional model fitted the data adequately,  $\chi^2/df = 2.66; p < .001$ ; CFI = 0.96; TLI = 0.95; RMSEA = 0.06, 90% CI[0.055, 0.061]; SNMR = 0.05. A two-factor structure model performed significantly better for types of passive SMU than a one-factor structure solution ( $\chi^2(29) = 9539.6, p < .001$ ), further supporting our assumed typology.

**Mental Health.** We relied on the (extended) two-continua model of mental health to measure mental health (cf. Greenspoon & Saklofske, 2001; Meier & Reinecke, 2020), which consists of two indicators that refer to either psychological well-being (i.e., positive mental health) or psychopathology (i.e., negative mental health), as described below. Each item asked participants to indicate how they felt in the past month.

**Psychological well-being.** Psychological well-being was measured as second order factor, via indicators of happiness, life satisfaction, and self-esteem. Psychological well-being comprised both subjective and more cognitive well-being (Dienlin & Johannes, 2020; Meier & Reinecke, 2020). Subjective well-being is reflected by experiences of pleasure and satisfaction and measured via indicators of happiness and life satisfaction (cf. Diener, 1984; Martela & Sheldon, 2019). Contrary, more cognitive well-being was measured via self-esteem (Dienlin & Johannes, 2020; Martela & Sheldon, 2019). *Happiness* was measured with a total of three items, based on the single-item happiness measure and supplemented by two simplified items of the happiness scale (Abdel-Khalek, 2006; Lyubomirsky & Lepper, 1999). Example items were: “In the past month, I felt happy in general” and “In the past month, I was happier than my peers”. *Life satisfaction* was measured via the abbreviated three-item version of the Satisfaction with Life Scale (Kjell & Diener, 2021). Self-esteem was operationalized via the single-item measure of self-esteem (Robins et al., 2001), and supplemented by 2 items of the Rosenberg Self-Esteem scale (Rosenberg, 1965). Reliability was high in both countries (JP:  $\omega_{t1} = 0.88, \omega_{t2} = 0.90, \omega_{t3} = 0.91$ ; NL:  $\omega_{t1} = 0.91, \omega_{t2} = 0.92, \omega_{t3} = 0.93$ , respectively for each wave). The CFA showed a reasonable fit with the data ( $\chi^2/df = 4.11; p < .001$ ; CFI = 0.94; TLI = 0.93; RMSEA = 0.08, 90% CI[0.076, 0.083]; SNMR = 0.07).

**Psychopathology.** Psychopathology was measured as a second-order factor via indicators of depression, stress, and social anxiety. *Depression* was measured via three items with the highest factor loadings of the dysthymia subscale of the State-Trait Depression Scale, representing the inability to experience positive feelings (Krohne et al., 2002). An example item was: “In the past month, I felt sad”. *Stress* was measured with three items of the DASS-21 based on the factor loadings of a cross-cultural comparison among adolescents (Henry & Crawford, 2005; Lovibond & Lovibond, 1995; Mellor et al., 2015). Example item was “In the past month, I found it difficult to relax”. *Social anxiety* was measured via three items with the highest factor loadings from the original Fear of Negative Evaluation subscale of the Social Anxiety Scale for Adolescents (SAS-A; Grecale and Lopez, 1998). Sample item was “In the past month, I worried about what others think of me”. Reliability of second-order factors were good in both countries (JP:  $\omega_{t1} = 0.82, \omega_{t2} = 0.83, \omega_{t3} = 0.84$ ; NL:  $\omega_{t1} = 0.82, \omega_{t2} = 0.85, \omega_{t3} = 0.84$ , respectively for each wave). The model fit was sufficient ( $\chi^2/df = 3.26; p < .001$ ; CFI = 0.95;

TLI = 0.94; RMSEA = 0.07, 90% CI[0.064, 0.071]; SNMR = 0.08).

**Body Satisfaction.** We used the 4-item body satisfaction scale, reflecting adolescents satisfaction with their physical appearance (Veldhuis et al., 2017). One item, reflecting satisfaction with their weight, was deleted to improve factorial validity of the construct. Reliability of body satisfaction was high in both countries (JP:  $\omega_{t1} = 0.91, \omega_{t2} = 0.92, \omega_{t3} = 0.91$ ; NL:  $\omega_{t1} = 0.91, \omega_{t2} = 0.92, \omega_{t3} = 0.93$ ), and the model had good incremental fit (CFI = 0.95, TLI = 0.94) but less than good absolute fit indices ( $\chi^2/df = 8.54; p < .001$ ; RMSEA = 0.12, 90% CI[0.114, 0.134]; SNMR = 0.17).

### 2.3. Analysis plan

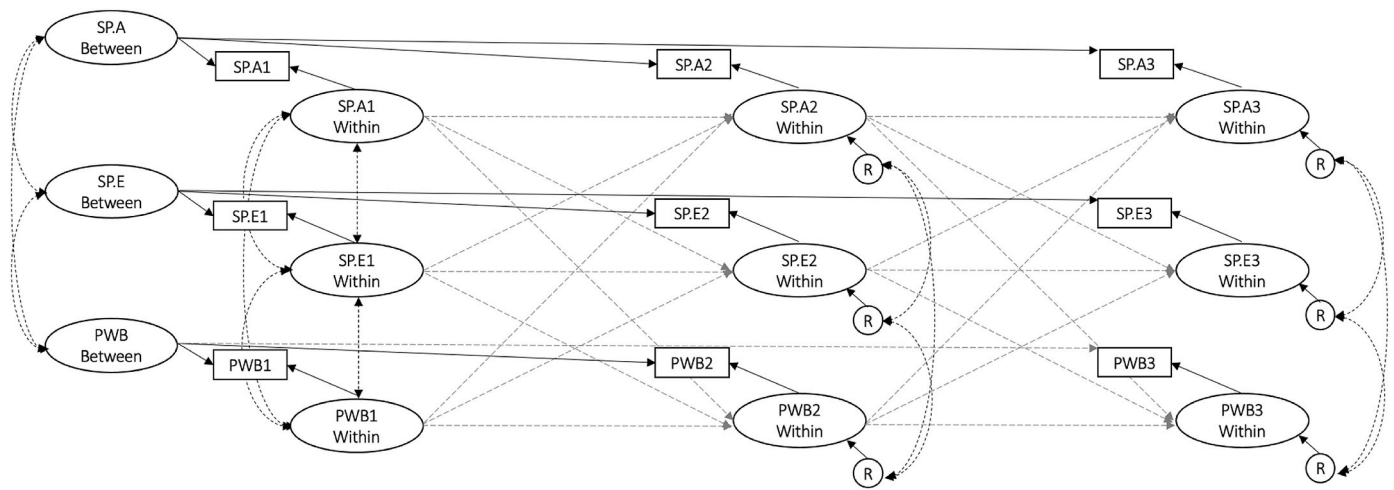
Hypothesis 1 was tested by correlating the random intercepts, representing the between-person perspective (i.e., individuals' mean scores across all three waves). The second hypothesis was tested from the within-person perspective, via correlating the within-person variance at T1, capturing their specific deviation at T1 from their overall score (i.e., their usual score). RQ1 has been analyzed by regressing the variables on all measures obtained 1 month earlier. Lastly, RQ2 examined all previous analyses for both countries separately. Model estimations were conducted separately for, on the one hand, psychological well-being, psychopathology, and body image, and on the other hand types of active self-presentation and types of passive exposures. Thus, in all, this study estimated six random intercept cross-lagged panel models (RI-CLPM; See Fig. 1 for an example of the examined RI-CLPM for the self-presentation effects on psychological well-being). Autoregressive and cross-lagged paths were constrained to be equal across waves to achieve more parsimonious models (cf. Hamaker et al., 2015). To answer RQ2 multigroup path invariance was tested. Results indicated that parameter estimates should be freely estimated across groups. Hence, we report on the results of the RI-CLPM's separately for each country (RQ2). In addition, based on previous social media effects research age and gender have been added as control variables to the models (cf. Beyens et al., 2020; Twenge & Martin, 2020). An OSF page provides analysis scripts (R code) additional analyses, merged dataset, and supplementary tables (<https://osf.io/pkhdy/>).

## 3. Results

In a first descriptive step, we analyzed the frequencies of types of active and passive SMU behaviors. For both authentic and edited content types, descriptive findings indicate that participants – across the three waves – are more passively engaged in seeing authentic and edited content (respectively:  $M = 5.51, SD = 2.12$  and  $M = 5.47, SD = 2.14$ ), than actively creating authentic and edited content (respectively:  $M = 4.31, SD = 3.06$  and  $M = 2.57, SD = 1.76$ ). This also indicates that, if participants are actively creating content, they construct more authentic visual self-presentations than edited self-presentations. In general, the Dutch participants were more actively as well as passively engaged, however, Japanese adolescents, on average, reported slightly more edited self-presentations than the Dutch adolescents (respectively:  $M = 2.94, SD = 2.07$ ;  $M = 2.87, SD = 1.41$ ; See Table S2 for all descriptive results of active and passive SMU typologies). Second, we analyzed the zero-order correlations between types of active SMU, passive SMU, body image and mental health (See Table S3 for zero-order correlations). Significant correlations between variables included in our hypotheses were mainly in line with our theoretical assumptions. However, among the Japanese sample we also found associations opposite to our assumptions, namely that creating and seeing authentic content was associated with higher levels of psychopathology (i.e., lower levels of mental health), further analyzed below.

### 3.1. Content heterogeneity, active self-presentation, and mental health

H1a predicted that, at the between person-level, creating authentic



**Fig. 1.** Hypothesized Between-Person and Within-Person Relationships between Types of Active SMU and Psychological Well-being  
 Note. SP. A = Self-presentation authentic, SP. E = Self-presentation edited, PWB = Psychological well-being. The dotted lines connecting the between-person variables represent between-person relations across all waves. The dotted lines connecting the within-person variables represent within-person relations per wave. The stippled lines represent the within-person cross-lagged relations across waves.

self-presentations is positively related to mental health (See Table 1a-b for findings of the RI-CLPM including types of active self-presentations and mental health). Findings showed that the correlation of random intercepts of authentic self-presentation and psychopathology was non-significant across the two countries. The correlation between random intercepts of authentic self-presentation and psychological well-being yielded a significant and positive relationship among Dutch adolescents, but not for Japanese adolescents. Dutch adolescents who – on average across the three waves – had a higher frequency of posting authentic self-presentations also experienced slightly higher levels of psychological well-being. Results of H1a (i.e., authentic self-presentation effects on mental health) are only partly supported.

H1b proposed that frequency of posting *edited* self-presentations is negatively related to mental health. Findings yielded a significant correlation between the random intercepts of idealized self-presentation and psychopathology. In both countries, results indicated that adolescents who – on average across the three waves – had a higher frequency of posting edited photos experienced higher levels of psychopathology, and thus experienced lower levels of mental health. In both countries, we did not find a significant correlation between the random intercepts of edited self-presentation and psychological well-being. Thus, H1b regarding edited self-presentation effects on mental health, is only partly supported.

H2a postulated that a within-person change in creating *authentic* self-presentation should be positively related to within-person changes in mental health. Then, H2b predicted that a within-person change in frequency of *edited* self-presentation should be negatively related to within-person changes in mental health. In both countries, no such significant correlations were found. Hence, looking at within-person self-effects on mental health, results did not support the predictions of H2a and H2b.

With RQ1 we examined the prolonged impact of online self-presentations on mental health 1 month later. Results showed that, for both Dutch and Japanese adolescents, changes in frequency of an individual’s online self-presentation did not have a prolonged impact on an individual’s mental health 1 month later.<sup>1</sup>

<sup>1</sup> Beyond the scope of the current study, we did find a reverse prolonged impact of psychopathology and psychological well-being on edited self-presentation among the Dutch sample (see Table 1a–b).

### 3.2. Content heterogeneity, self-presentation effects, and body satisfaction

At the between-person level, H1a postulated that frequency of creating authentic self-presentations is positively related to body satisfaction (See Table 1c for findings of the RI-CLPM including types of active self-presentations and mental health). Results indicated that the random intercepts of the two variables were significantly correlated within the Dutch adolescent group. No such significant correlation between the random intercepts was found among the Japanese adolescent sample. Hence, the assumption that adolescents who – on average across the three waves – had a higher frequency also experienced slightly higher levels body satisfaction (H1a), was only supported among Dutch adolescents.

H1b predicted that adolescents with a higher frequency of posting edited self-presentations than others would experience lower levels of body satisfaction. The random intercepts of the two variables were found to be non-significant among both groups. Results of between-person edited self-presentation effects on body image did not support the predictions of H1b.

At the within-person level, H2a proposed that adolescents with a higher frequency of posting authentic self-presentation at T1 than they normally do across all waves, will also experience higher levels of body satisfaction at T1 than they normally have across all waves. In both countries, no such significant correlation was found. Thus, no support was found for within-person changes of self-presentation effects on body image (H2a).

H2b hypothesized that adolescents with a higher frequency of posting edited self-presentation than usual, will also experience lower levels of body satisfaction than usual. Results revealed a small significant correlation among Japanese adolescents, suggesting that when these adolescents posted more edited self-presentations at T1 than they normally do across three waves, they also experienced higher levels of body satisfaction at T1 than normally. Contrary to our expectation, we found a positive correlation instead of the hypothesized negative relationship. No significant correlation was found among Dutch adolescents. Thus, findings did not support the expected within-person effects of edited self-presentation on body satisfaction (H2b).

To answer RQ1, we examined the prolonged impact of online self-presentations on body satisfaction 1 month later. Findings indicated that an individual’s increase in posting authentic self-presentations resulted in an individual’s increase of body satisfaction 1 month later among Japanese adolescents. Contrary, among Dutch adolescents, we found that an individual’s increase in posting authentic self-

**Table 1a**

Parameter estimates of active self-presentation and psychopathology obtained from the random-intercept cross-lagged panel model, specified for the two countries.

			JP			NL		
			<i>b</i>	SE <i>b</i>	<i>p</i>	<i>b</i>	SE <i>b</i>	<i>p</i>
<i>Between-person correlation across all waves</i>								
Authentic self-presentation	↔	Edited self-presentation	1.541	0.192	<.001	0.948	0.232	<.001
Authentic self-presentation	↔	Psychopathology	0.213	0.156	0.172	-0.394	0.289	0.172
Edited self-presentation	↔	Psychopathology	<b>0.609</b>	<b>0.190</b>	<b>&lt;.01</b>	<b>0.417</b>	<b>0.122</b>	<b>&lt;.01</b>
<i>Within-person correlations at T1</i>								
Authentic self-presentation	↔	Edited self-presentation	0.597	0.150	<.001	1.134	0.213	<.001
Authentic self-presentation	↔	Psychopathology	-0.071	0.138	0.608	0.191	0.233	0.412
Edited self-presentation	↔	Psychopathology	0.128	0.156	0.412	-0.161	0.107	0.131
<i>Autoregressive paths across 1 month (constrained)</i>								
Authentic self-presentation	→	Authentic self-presentation	0.338	0.063	<.001	0.053	0.091	0.558
Edited self-presentation	→	Edited self-presentation	0.302	0.061	<.001	0.068	0.063	0.279
Psychopathology	→	Psychopathology	0.221	0.107	<.05	0.349	0.070	<.001
<i>Cross-lagged within person changes across one month (constrained)</i>								
Authentic self-presentation	→	Edited self-presentation	0.087	0.060	0.150	0.049	0.024	<.05
Authentic self-presentation	→	Psychopathology	0.034	0.072	0.635	0.003	0.028	0.915
Edited self-presentation	→	Authentic self-presentation	-0.002	0.050	0.971	0.351	0.141	<.05
Edited self-presentation	→	Psychopathology	-0.059	0.065	0.364	0.061	0.059	0.296
Psychopathology	→	Authentic self-presentation	-0.032	0.055	0.554	0.076	0.139	0.587
Psychopathology	→	Edited self-presentation	-0.018	0.062	0.778	0.115	0.047	<.05

Note. Significant findings included in our hypotheses and research questions have been highlighted in bold. Model fit:  $\chi^2/df = 1.65$ ;  $p < .05$ ; CFI = 0.99; TLI = 0.98; RMSEA = 0.04, 90% CI[0.013, 0.056]; SNMR = 0.02.

**Table 1b**

Parameter estimates of active self-presentation and psychological well-being obtained from the random-intercept cross-lagged panel model, specified for the two countries.

			JP			NL		
			<i>b</i>	SE <i>b</i>	<i>p</i>	<i>b</i>	SE <i>b</i>	<i>p</i>
<i>Between-person correlation across all waves</i>								
Authentic self-presentation	↔	Edited self-presentation	1.581	0.189	<.001	0.991	0.210	<.001
Authentic self-presentation	↔	Psychological well-being	0.333	0.182	0.068	<b>0.933</b>	<b>0.295</b>	<b>&lt;.01</b>
Edited self-presentation	↔	Psychological well-being	-0.073	0.215	0.734	-0.073	0.118	0.538
<i>Within-person correlations at T1</i>								
Authentic self-presentation	↔	Edited self-presentation	0.565	0.146	<.001	1.115	0.225	<.001
Authentic self-presentation	↔	Psychological well-being	-0.174	0.154	0.258	0.260	0.239	0.276
Edited self-presentation	↔	Psychological well-being	-0.056	0.172	0.746	0.131	0.106	0.214
<i>Autoregressive paths across 1 month (constrained)</i>								
Authentic self-presentation	→	Authentic self-presentation	0.315	0.064	<.001	0.049	0.096	0.611
Edited self-presentation	→	Edited self-presentation	0.301	0.064	<.001	0.094	0.071	0.190
Psychological well-being	→	Psychological well-being	0.422	0.081	<.001	0.478	0.075	<.001
<i>Cross-lagged within person changes across one month (constrained)</i>								
Authentic self-presentation	→	Edited self-presentation	0.080	0.061	0.192	0.044	0.026	0.093
Authentic self-presentation	→	Psychological well-being	-0.014	0.065	0.832	-0.009	0.025	0.711
Edited self-presentation	→	Authentic self-presentation	-0.005	0.051	0.921	0.311	0.154	<.05
Edited self-presentation	→	Psychological well-being	0.091	0.059	0.127	-0.040	0.052	0.440
Psychological well-being	→	Authentic self-presentation	0.051	0.053	0.334	-0.202	0.193	0.296
Psychological well-being	→	Edited self-presentation	0.014	0.059	0.812	-0.167	0.066	<.05

Note. Significant findings included in our hypotheses and research questions have been highlighted in bold. Model fit:  $\chi^2/df = 1.45$ ;  $p > .05$ ; CFI = 0.99; TLI = 0.99; RMSEA = 0.03, 90% CI[0.000, 0.051]; SNMR = 0.02.

presentations resulted in an individual's decrease of body satisfaction 1 month later. In both countries, no significant within-person longitudinal effects were found between edited self-presentations and body satisfaction.<sup>2</sup>

3.3. Content heterogeneity, effects of passive exposure, and mental health

At the between-person level, H1a predicted that the frequency of passive exposure to authentic photos of others is positively related to mental health (See Table 2a-b for findings of the RI-CLPM including types of passive exposure and mental health). Contrary to our expectation, we found a positive correlation between the random intercepts of

<sup>2</sup> Beyond the scope of the current study, we also found a reverse prolonged impact of body satisfaction on edited and authentic self-presentation among the Dutch sample (see Table 1c).

authentic passive exposure and psychopathology among the Japanese adolescents. Hence, individuals who – on average across three waves - see more authentic photos of others, experienced higher levels of psychopathology (i.e., and thus experience lower levels of mental health). We did not find a significant correlation between authentic passive exposure and psychopathology among the Dutch sample. However, we did find a significant positive correlation between the random intercepts of authentic passive exposure and psychological well-being for Dutch adolescents, which was in line with our expectations. No significant correlation was found in the Japanese sample. Thus, effects of passive exposure (H1a) were only partly supported.

H1b proposed that adolescents who see more edited photos, experience higher levels of mental health. For Dutch adolescents who - on average across three waves - see more edited photos, experienced higher levels of psychopathology (i.e., lower levels of mental health). We did not find this relationship for Japanese adolescents. For both Dutch and Japanese adolescents, we did not find a significant correlation between



**Table 1c**

Parameter estimates of active self-presentation and body satisfaction obtained from the random-intercept cross-lagged panel model, specified for the two countries.

			JP			NL		
			<i>b</i>	SE <i>b</i>	<i>p</i>	<i>b</i>	SE <i>b</i>	<i>p</i>
<i>Between-person correlation across all waves</i>								
Authentic self-presentation	↔	Edited self-presentation	1.551	0.192	<.001	0.860	0.235	<.001
Authentic self-presentation	↔	Body satisfaction	-0.068	0.157	0.665	<b>1.160</b>	<b>0.245</b>	<b>&lt;.001</b>
Edited self-presentation	↔	Body satisfaction	-0.349	0.193	0.070	-0.162	0.111	0.142
<i>Within-person correlations at T1</i>								
Authentic self-presentation	↔	Edited self-presentation	0.578	0.149	<.001	1.166	0.214	<.001
Authentic self-presentation	↔	Body satisfaction	0.053	0.115	0.646	0.230	0.182	0.207
Edited self-presentation	↔	Body satisfaction	<b>0.281</b>	<b>0.133</b>	<b>&lt;.05</b>	0.070	0.084	0.401
<i>Autoregressive paths across 1 month (constrained)</i>								
Authentic self-presentation	→	Authentic self-presentation	0.312	0.066	<.001	0.021	0.082	0.793
Edited self-presentation	→	Edited self-presentation	0.305	0.060	<.001	0.086	0.074	0.243
Body satisfaction	→	Body satisfaction	0.148	0.111	0.182	0.058	0.099	0.562
<i>Cross-lagged within person changes across one month (constrained)</i>								
Authentic self-presentation	→	Edited self-presentation	0.100	0.063	0.114	0.057	0.025	<.05
Authentic self-presentation	→	Body satisfaction	<b>0.144</b>	<b>0.068</b>	<b>&lt;.05</b>	<b>-0.068</b>	<b>0.027</b>	<b>&lt;.05</b>
Edited self-presentation	→	Authentic self-presentation	0.011	0.049	0.819	0.399	0.142	<.01
Edited self-presentation	→	Body satisfaction	-0.035	0.058	0.543	-0.046	0.064	0.473
Body satisfaction	→	Authentic self-presentation	0.108	0.069	0.118	-0.467	0.158	<.01
Body satisfaction	→	Edited self-presentation	-0.034	0.079	0.666	-0.146	0.064	<.05

Note. Significant findings included in our hypotheses and research questions have been highlighted in bold. Model fit:  $\chi^2/df = 1.45$ ;  $p > .05$ ; CFI = 0.99; TLI = 0.99; RMSEA = 0.03, 90% CI[0.000, 0.051]; SNMR = 0.02.

**Table 2a**

Parameter estimates of passive exposures and psychopathology obtained from the random-intercept cross-lagged panel model, specified for the two countries.

			JP			NL		
			<i>b</i>	SE <i>b</i>	<i>p</i>	<i>b</i>	SE <i>b</i>	<i>p</i>
<i>Between-person correlation across all waves</i>								
Authentic passive exposure	↔	Edited passive exposure	2.199	0.406	<.001	0.270	0.169	0.111
Authentic passive exposure	↔	Psychopathology	<b>0.560</b>	<b>0.245</b>	<b>&lt;.05</b>	-0.029	0.180	0.873
Edited passive exposure	↔	Psychopathology	0.445	0.299	0.136	<b>0.813</b>	<b>0.176</b>	<b>&lt;.001</b>
<i>Within-person correlations at T1</i>								
Authentic passive exposure	↔	Edited passive exposure	3.064	0.373	<.001	0.519	0.152	<.01
Authentic passive exposure	↔	Psychopathology	0.185	0.237	0.436	-0.122	0.142	0.392
Edited passive exposure	↔	Psychopathology	<b>0.488</b>	<b>0.248</b>	<b>&lt;.05</b>	-0.024	0.147	0.872
<i>Autoregressive paths across 1 month (constrained)</i>								
Authentic passive exposure	→	Authentic passive exposure	0.048	0.082	0.558	-0.215	0.076	<.01
Edited passive exposure	→	Edited passive exposure	0.155	0.109	0.156	0.110	0.077	0.155
Psychopathology	→	Psychopathology	0.233	0.091	<.05	0.398	0.067	<.001
<i>Cross-lagged within person changes across one month (constrained)</i>								
Authentic passive exposure	→	Edited passive exposure	-0.042	0.079	0.596	-0.105	0.065	0.105
Authentic passive exposure	→	Psychopathology	<b>-0.166</b>	<b>0.052</b>	<b>&lt;.05</b>	<b>-0.131</b>	<b>0.051</b>	<b>&lt;.05</b>
Edited passive exposure	→	Authentic passive exposure	0.052	0.077	0.501	0.056	0.072	0.432
Edited passive exposure	→	Psychopathology	0.090	0.056	0.106	0.037	0.045	0.405
Psychopathology	→	Authentic passive exposure	-0.239	0.092	<.01	-0.161	0.097	0.096
Psychopathology	→	Edited passive exposure	-0.005	0.110	0.963	0.166	0.073	<.05

Note. Significant findings included in our hypotheses and research questions have been highlighted in bold. Model fit:  $\chi^2/df = 2.12$ ;  $p < .001$ ; CFI = 0.99; TLI = 0.97; RMSEA = 0.05, 90% CI[0.029, 0.066]; SNMR = 0.03.

edited passive exposure and psychological well-being. H1b is thus supported for Dutch adolescents, but only for the psychopathology indicator of mental health.

At the within-person level, H2a predicted that those with higher levels of passive exposures to authentic photos of others than usual across all waves will also experience higher levels of mental health than they usually have. This hypothesis is only found support for psychological well-being as mental health indicator as well as only for Dutch adolescents. Hence, among Dutch adolescents, an intra-adolescent change in passive exposures to others' authentic photos is positively related to intra-adolescent changes in psychological well-being.

H2b examined the within-level relationships between passive exposures to edited self-presentations and mental health indicators. Findings only yielded a significant within-person relationship between exposure to others' edited photos and psychopathology in the Japanese sample. Japanese adolescents with a higher frequency of passive exposure to others' edited photos than usual also experienced a higher level of psychopathology than usual (i.e., lower level of mental health).

RQ1 examined the longer-term impact of passive exposures (i.e., authentic and edited) on mental health. Results showed that an individual's increase in frequency of exposure to authentic photos of others led to lower levels of an individual's psychopathology in the next month among adolescents in both countries (i.e., increased mental health). We did not find a prolonged impact of passive exposures (i.e., authentic or edited) on psychological well-being.<sup>3</sup>

### 3.4. Content heterogeneity, effects of passive exposures, and body satisfaction

Examining the between-person relationships, H1a predicted that frequency of passive exposure to authentic photos of others is related to

<sup>3</sup> Beyond the scope of the current study, we also found several reversed lagged relationships between psychopathology, psychological well-being and seeing edited and authentic content (see Table 2a–b).

**Table 2b**

Parameter estimates of passive exposures and psychological well-being obtained from the random-intercept cross-lagged panel model, specified for the two countries.

			JP			NL		
			<i>b</i>	SE <i>b</i>	<i>p</i>	<i>b</i>	SE <i>b</i>	<i>p</i>
<i>Between-person correlation across all waves</i>								
Authentic passive exposure	↔	Edited passive exposure	2.141	0.378	<.001	0.340	0.175	0.051
Authentic passive exposure	↔	Psychological well-being	-0.048	0.259	0.852	<b>0.284</b>	<b>0.131</b>	<.05
Edited passive exposure	↔	Psychological well-being	-0.302	0.308	0.327	0.077	0.180	0.669
<i>Within-person correlations at T1</i>								
Authentic passive exposure	↔	Edited passive exposure	3.040	0.376	<.001	0.521	0.157	<.01
Authentic passive exposure	↔	Psychological well-being	0.312	0.249	0.211	<b>0.424</b>	<b>0.154</b>	<.01
Edited passive exposure	↔	Psychological well-being	-0.102	0.266	0.702	0.133	0.144	0.355
<i>Autoregressive paths across 1 month (constrained)</i>								
Authentic passive exposure	→	Authentic passive exposure	0.036	0.088	0.679	-0.201	0.079	<.05
Edited passive exposure	→	Edited passive exposure	0.138	0.106	0.192	0.131	0.084	0.118
Psychological well-being	→	Psychological well-being	0.423	0.077	<.001	0.470	0.080	<.001
<i>Cross-lagged within person changes across one month (constrained)</i>								
Authentic passive exposure	→	Edited passive exposure	-0.055	0.082	0.508	-0.108	0.065	0.093
Authentic passive exposure	→	Psychological well-being	0.025	0.051	0.623	0.080	0.041	0.052
Edited passive exposure	→	Authentic passive exposure	0.044	0.073	0.543	0.007	0.074	0.929
Edited passive exposure	→	Psychological well-being	0.052	0.052	0.323	-0.046	0.039	0.233
Psychological well-being	→	Authentic passive exposure	0.221	0.087	<.05	0.358	0.122	<.01
Psychological well-being	→	Edited passive exposure	0.244	0.104	<.05	-0.186	0.104	0.073

Note. Significant findings included in our hypotheses and research questions have been highlighted in bold. Model fit:  $\chi^2/df = 2.25$ ;  $p < .001$ ; CFI = 0.99; TLI = 0.97; RMSEA = 0.05, 90% CI[0.032, 0.068]; SNMR = 0.03.

higher body satisfaction (See Table 2c for findings of the RI-CLPM including types of passive exposure and body satisfaction). A correlation between the random intercepts of the two variables indicated a positive and significant relationship in both countries. Dutch and Japanese adolescents who - on average across the three waves - had a higher frequency of being exposed to authentic photos also experienced higher levels body satisfaction. Hence, the between-person relationship between authentic passive exposure and body satisfaction is supported for both countries (H1a).

Then, H1b hypothesized that the frequency of exposure to edited self-presentations is negatively related to body satisfaction. This hypothesis is only supported for the Dutch adolescent sample. That is, Dutch adolescents who - on average across the three waves - had a higher frequency of passive exposure to edited photos, experienced lower levels of body satisfaction.

At the within-person level, H2a predicted that a within-person change in passive exposures to others' authentic photos is positively related to within-person changes in body satisfaction. Then, H2b postulated that a within-person change in passive exposures to others' edited photos is negatively related to within-person changes in body satisfaction. In both countries, no such correlations were found significant. Hence, results did not support the within-person predictions of H2a and H2b, regarding the passive exposure effects on body satisfaction.

RQ1 subsequently investigated the prolonged impact of passive exposures on body satisfaction. No significant prolonged impact of passive exposures (i.e., authentic and edited) was found within our Japanese sample. However, among Dutch participants, authentic passive exposures led to a decrease in an individual's body satisfaction 1 month later (and vice versa<sup>4</sup>).

### 3.5. Cross-national comparison

In the previous section, results showed that patterns between types of SMU and mental health and body satisfaction are generally not consistent across countries. Here, we would like to highlight some noteworthy similarities and differences. At the between-person level, relationships between creating authentic and edited content and psychopathology

<sup>4</sup> Beyond the scope of the current study, we also found a reversed lagged relationships between body satisfaction and authentic passive exposures among Dutch adolescents (see Table 2c).

were consistent across countries (i.e., self-presentation effects), whereas effects of passive exposure to others' authentic or edited content were found to be significant in one country but not the other. Similarly, within-person effects of SMU on both mental health indicators were found to be insignificant regarding self-presentation effects across the two countries, but for recipient-effects differences in path estimates were found. That is, a significant and positive correlation was found between edited passive exposure and psychopathology among Japanese adolescents, whereas a significant and positive correlation between authentic passive exposure and psychological well-being was found in the Dutch sample. Contrary, we found that within-person correlations regarding body satisfaction only differed for the self-presentation effects and not passive exposure effects. Hence, especially within- and between-person passive exposures effects on mental health seem to be guided by differential susceptibility at the country-level, whereas particularly within-person self-presentation effects on body image are dependent upon the country of origin.

Moreover, looking at the within-person cross-lagged path estimates we mainly found non-significant results for both self-presentation and passive-exposure effects on mental health in both countries. However, for self-presentation effects on body image, contrasting results were found between Dutch and Japanese adolescents. A positive effect of creating authentic self-presentations on body satisfaction one month later was found among Japanese adolescents, whereas a negative effect was found among Dutch adolescents.

## 4. Discussion

The current study examined the within- and between-person processes of content heterogeneity in both active self-presentation and passive exposure on mental health and body satisfaction among Dutch and Japanese adolescents. A group comparison between the Dutch and the Japanese sample showed that country-of-origin was a significant moderator (RQ2). Hence, our between and-within hypotheses as well as our lagged within-person research question are reported separately for both countries.

In our first hypotheses (H1ab), we tested the between-person correlations to examine whether frequency of creating and seeing authentic and edited photos was positively or negatively related to mental health and body satisfaction. Results of testing our between-person hypotheses showed partial support. That is, hypotheses were either only supported among adolescents in one country or only supported for one of the

**Table 2c**

Parameter estimates of passive exposures and body satisfaction obtained from the random-intercept cross-lagged panel model, specified for the two countries.

			JP			NL		
			<i>b</i>	SE <i>b</i>	<i>p</i>	<i>b</i>	SE <i>b</i>	<i>p</i>
<i>Between-person correlation across all waves</i>								
Authentic passive exposure	↔	Edited passive exposure	2.100	0.368	<.001	0.231	0.179	0.197
Authentic passive exposure	↔	Body satisfaction	<b>1.969</b>	<b>0.283</b>	<b>&lt;.001</b>	<b>0.599</b>	<b>0.150</b>	<b>&lt;.001</b>
Edited passive exposure	↔	Body satisfaction	-0.206	0.215	0.339	<b>-0.592</b>	<b>0.157</b>	<b>&lt;.001</b>
<i>Within-person correlations at T1</i>								
Authentic passive exposure	↔	Edited passive exposure	2.991	0.371	<.001	0.525	0.147	<.001
Authentic passive exposure	↔	Body satisfaction	0.005	0.190	0.980	0.114	0.102	0.264
Edited passive exposure	↔	Body satisfaction	-0.258	0.202	0.201	-0.017	0.104	0.870
<i>Autoregressive paths across 1 month (constrained)</i>								
Authentic passive exposure	→	Authentic passive exposure	0.052	0.089	0.556	-0.153	0.090	0.089
Edited passive exposure	→	Edited passive exposure	0.148	0.098	0.131	0.055	0.101	0.589
Body satisfaction	→	Body satisfaction	0.193	0.102	0.060	0.069	0.116	0.551
<i>Cross-lagged within person changes across one month (constrained)</i>								
Authentic passive exposure	→	Edited passive exposure	-0.025	0.080	0.756	-0.079	0.070	0.260
Authentic passive exposure	→	Body satisfaction	0.004	0.048	0.930	<b>-0.117</b>	<b>0.048</b>	<b>&lt;.05</b>
Edited passive exposure	→	Authentic passive exposure	0.052	0.072	0.472	0.047	0.078	0.546
Edited passive exposure	→	Body satisfaction	0.059	0.047	0.209	0.077	0.055	0.161
Body satisfaction	→	Authentic passive exposure	0.180	0.106	0.089	-0.290	0.115	<.05
Body satisfaction	→	Edited passive exposure	0.215	0.118	0.069	0.035	0.117	0.762

Note. Significant findings included in our hypotheses and research questions have been highlighted in bold. Model fit:  $\chi^2/df = 2.36$ ;  $p < .001$ ; CFI = 0.99; TLI = 0.96; RMSEA = 0.05, 90% CI[0.035, 0.070]; SNMR = 0.03.

content types (i.e., authentic or edited). Even though the hypotheses were only partly supported, the relationships we found were generally in line with the extant literature of between-person correlations. Between-person results indicate that regardless of being active or passive, both creating or seeing *authentic* content is associated with higher levels of mental health and body satisfaction. Contrary, both creating and seeing *edited* content coincided with decreases in mental health and body satisfaction. However, one significant relationship that was contrary to our expectations. Namely, among Japanese adolescents, seeing more authentic self-presentations of others coincided with higher levels of psychopathology (i.e., lower mental health). A possible explanation for this unexpected result could reside in the type of social comparison process that took place. Downward assimilative processes – looking down on an inferior target and feeling similar to the target – can elicit feelings of distress and concern of being in a similar situation as the target comparison (Tsay-Vogel & Krakowiak, 2019). Earlier studies indicate that individuals from collectivistic cultures are more likely to assimilate to others (Baldwin & Mussweiler, 2018). Therefore, adolescents from collectivistic-oriented countries could be more likely to elicit responses of fear and disappointment to not satisfying the group needs.

Our second hypotheses (H2ab) tested the within-person correlations to examine whether creating and seeing more authentic and edited photos than usual would be related to higher or lower levels of mental health and body satisfaction. Regarding self-presentation effects, we found no support for within-person correlations between creating authentic or edited photos and the indicators of mental health (i.e., psychological well-being and psychopathology). Contrary to our expectations, we did find a positive within-person correlation between creating *edited* self-presentations and body satisfaction among Japanese adolescents. A possible explanation might be that within Japanese culture the better individuals are able to live up to their societal and group standards, the better the overall functioning of individuals (Heine et al., 2001). In that light, self-improvement efforts via online editing, provides the autonomy and mastery to live up to the beauty standards. Such outcomes could be expected from selective self-presentation, empowerment principles, and identity shift assumptions, where it's argued that control and autonomy to highlight positive aspects of oneself can evoke a self-transformation consistent with the selective self-presentation (Gonzales & Hancock, 2008; Tiidenberg & Gómez Cruz, 2015; Walther, 1996). However, such possible positive outcomes of photo-editing have generally not been confirmed in earlier studies (e.g., Tiggemann et al., 2020). The results of our second hypotheses suggest

that the impact of online self-presentations on body satisfaction depends on how culturally embedded individuals respond to such content.

Then, looking at recipient effects from seeing photos of others, we found that, in line with our expectations, a within-person change among Japanese adolescents in passive exposures to edited self-presentations of others is positively related to within-person changes in psychopathology. Furthermore, seeing more authentic self-presentations of others than usual is associated with higher than usual levels of psychological well-being among Dutch adolescents. No support was found for within-person correlations between the types of passive exposure and body satisfaction. In sum, results indicate some meaningful within-person associations of passive exposures to authentic or edited content of others with mental health indicators, but not with body satisfaction. These findings are opposite to the findings of self-presentation effects, where we only found meaningful within-person associations with body satisfaction and not mental health indicators.

In comparing the results from our between- and within-person results, findings showed that between-person processes differ from within-person processes. For example, no between-person correlation was found between creating edited self-presentations and body image, but rather a positive within-person correlation between those two variables was found. Hence, in line with previous studies findings illustrate the importance of separating between- and within-person variance (Orben et al., 2019; Schreurs et al., 2021). Results highlight that the results of cross-sectional between-person studies cannot be directly translated to within-person inferences.

Lastly, we questioned (RQ1) whether changes in frequency of creating online visual self-presentations or viewing visual self-presentations of others (i.e., authentic and edited) affect mental health and body satisfaction one month later (time-lagged *within-person* correlation of deviations)? With respect to self-effects, no lasting effects of actively creating either authentic or edited self-presentations were found on the mental health indicators. Additionally, a Dutch adolescents' increase in creating authentic self-presentation resulted in lower levels of body image one month later, whereas an individual's increase in creating authentic self-presentation among Japanese adolescents resulted in higher levels of body image one month later. Such findings typically illustrate that creating similar types of content can induce different responses from individuals varying in cultural context (cf. Valkenburg & Peter, 2013). Regarding recipient-effects, no lasting effects were found of passively viewing *edited* self-presentations on the mental health indicators. However, we did find that passive exposures to

authentic photos of others led to lower levels of an individual's psychopathology in the next month in both countries (i.e., increased mental health), but was unrelated to psychological well-being in the next month. Lastly, we found that an individual's increase in authentic passive exposure results in a decrease of body satisfaction one month later among Dutch adolescents (and vice versa). Hence, we particularly found evidence for the lagged-within relationships of creating and seeing authentic on body satisfaction. Though, generally, the cross-lagged effects of content-specific SMU on mental health were insignificant. As an explanation, it might be the case that changes in content-specific SMU and mental health are affected more immediately. To test this assumption, we would need alternative study designs with shorter time intervals, such as applying experience sampling studies (e.g., [Beyens et al., 2020](#)).

Altogether, results of the current study showcase that differences in active self-presentation and passive exposure to others' self-presentation are not in line with the previously assumed presumptions in the literature in which active SMU would be connected to positive outcomes whereas passive SMU would relate to negative outcomes for mental health and body image. For example, at the between-person level, we found that both creating more edited self-presentations as well as seeing more edited self-presentations also resulted in higher levels of psychopathology (i.e., lower mental health). Additionally, at the within-person level, among Dutch participants seeing more authentic self-presentations of others than usual is connected to higher levels of psychological well-being than usual (i.e., higher mental health). Moreover, within-person lagged effects showed that an individual's increase in exposure to authentic photos of others reduces an individual's levels of psychopathology on month later (i.e., higher mental health) in both countries. Hence, as theorized, the created and seen content plays a very important role in determining either positive, negative, or non-significant findings on mental health and body image. Results showed that regardless of being active or passive online, creating and seeing authentic content can result in positive outcomes, whereas creating and seeing edited content resulted in negative outcomes.

In all, we may coin several explanations for the thus far inconsistent results that have been found in social media effects research and instigated an intense debate. In this study we highlight three possible explanations: (1) specification of content heterogeneity; (2) distinguish within-person and between-person differences; and (3) account for differential susceptibility to media effects (here, national culture at the group/macro level). Other possible explanations may further answer why hypotheses were only partly supported. Social media environments include a rich context that are hard to disentangle. For example, the content we currently examined is commonly embedded within a broader context experienced, including a caption, reactions, likes, and is also mixed with other content. The way in which individuals experience such content may heavily depend on the other features they encounter, and individuals might differ in how they process the context. However, how individuals may differently process the seen and created content is not investigated, and more research is needed to substantiate this speculation. Additionally, other group-level moderators such as peer norms, or person-specific effects can underline differential susceptibility to media effects.

Our knowledge of social media effects largely depends on between-person results. The current study extended our knowledge of the importance of a content-specific paradigm from a between-person perspective to a within-person perspective. Within-person designs capture the core of media effects, namely the within-person changes in cognitions, emotions, attitudes, and behavior resulting from media use ([Valkenburg et al., 2016](#)). Moreover, the theoretical notion that social media effects cannot be uniformly applied to all individuals was tested with country of origin as a moderating factor. The results support the theoretical proposition that social media effects are conditional ([Masur et al., 2022](#); [Valkenburg & Peter, 2013](#)), and that the macro-level social context influences responsiveness to social media effects. Lastly, this

study indicated that social media behaviors are not uniformly related to levels of psychology and psychological well-being. Remarkably, assumed negative relationships of edited content generally coincide with psychopathology (i.e., negative mental health) but relate less to psychological well-being (positive mental health). Similarly, the assumed positive relationships of authentic content generally coincide with psychological well-being (i.e., positive mental health) and less to psychopathology (i.e., negative mental health). These results, provide important insights on which behaviors influence mental health indicators, and showcase the importance to differentiate between psychopathology and psychological well-being.

Besides the theoretical implications the results of this study also hold concrete implications for the improvement of social media literacy, where it is important to reduce the envisioned negative effects while at the same time maximize positive effects. This study holds three main implications that improve social media literacy. Upon providing information about social media effects, it is important to communicate that 1) the type of content (i.e., authentic or edited) seems more informative than the type of behavior (i.e., being active or passive), 2) both positive and negative mental health indicators should be addressed, and 3) social media effects cannot be uniformly attributed to all adolescents. In all, social media use is not inherently good or bad, but largely depends on who uses social media, how they use it, and how they respond to their usage.

## 5. Limitations and future research

This study aimed to further the social media effects debate by focusing on limitations within the field, however, the current study has its own limitations. The first refers to the inference of causality. That is, even though measurement points precede in time, still panel designs are at risk of measuring changes in mental health and body image that are not necessarily caused by SMU. Hence, we cannot claim causality of the found relationships. A second limitation concerns the retrospectively self-reported data, which are prospect to known issues of accuracy and validity of the measures ([Johannes et al., 2021](#); [Verbeij et al., 2021](#)). Nevertheless, based on these retrospective self-reported measures, we were able to take a next step in disentangling the importance of specifying content heterogeneity in self-presentation and passive exposure effects. Future studies could aim to use different approaches to disentangle content heterogeneity for example through diary measures or data donation packages ([van Driel et al., 2021](#)). Moreover, the long-term impact of SMU may be different when applying a different time interval between waves (cf. [Schemer et al., 2020](#)). Therefore, short-term intervals (e.g., daily, weekly) as well as longer (e.g., yearly) could be applied to provide more information about the potential longer-term effects of content-specific SMU.

Third, we must also note that no multigroup measurement invariance for the types of active self-presentation was found. That is, the dimensions of active self-presentation can have a different meaning in the two countries, indicating caution when comparing these countries. Moreover, we would like to note that study results cannot be directly generalized to countries that hold similar cultural values of individualism/collectivism and uncertainty avoidance on the national level. For example, even studies examining countries characterized as being more individualistic still find indications that the effects of social media use are not generalizable across individualistic countries ([Karsay et al., 2021](#)). Small differences at the national level in scores on individualism/collectivism, or for example differences in power-distance and masculinity could potentially explain such social media effects heterogeneity across countries. However, even if our results suggest that effects can be shared across a larger population at the aggregate level, causal patterns can still vary from person to person ([Hertog, 2021](#)). Particularly, our found measurement variance for active self-presentation calls for some more in-depth knowledge on how social media is used in different cultural context via focus-groups, for example.

As a fourth limitation, this study only focused on content heterogeneity of visual photos on social media in general, but these were not placed into full social media context which, for example, includes different platform characteristics as well as contextual information such as caption, reaction and likes. Hence we should acknowledge that how the content is perceived may depend on the contextualization of the photo or post (cf. Veldhuis et al., 2014). The contextualization of content heterogeneity is another important avenue for future research. For example, one could question if individuals might respond differently to similar content types depending on the social media platform, sender, and peer reactions. Lastly, we have largely used brief measures, to specifically address our adolescent target group, that slightly differentiate from the original measures. As such, this should be kept in mind when making comparisons with other studies.

## 6. Conclusion

In all, the current research contributes previous research in several ways. Our results (1) showcase the importance of a communication-centered approach including different content types of SMU; (2) examined *lagged* relationships between SMU, mental health and body satisfaction; (3) distinguish both between and within-person effects; (4) taps upon the complexity of measuring mental health by including indicators for both psychological well-being and psychopathology; and (5) informs about cross-national differences and similarities. In line with our theoretical assumptions, we hardly found support for the active-passive hypotheses in previous literature. Rather, the content one either creates or sees (i.e., authentic vs. edited) is found to be more accurate in determining the potential outcomes than being active or passive. Here, both the creation of and being exposed to authentic photos can induce positive outcomes, whereas both the creation of and being exposed to edited photos of others was found to relate to negative outcomes. However, results were dependent upon (lagged) within- and between-person processes, and showed cross-national differential susceptibility.

## Credit author statement

Nadia A.J.D. Bij de Vaate: Conceptualization, Methodology, Formal Analysis, Investigation, Data Curation, Writing – Original Draft, Visualization, Jolanda Veldhuis: Conceptualization, Methodology, Writing-Review & Editing, Supervision, Elly A. Konijn: Conceptualization, Writing-Review & Edition, Supervision.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

Data and R code are available on OSF (<https://osf.io/pkhdy/>).

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chb.2023.107906>.

## References

Abdel-Khalek, A. M. (2006). Measuring happiness with a single-item scale. *Social Behavior and Personality*, 34(2), 139–150. <https://doi.org/10.2224/sbp.2006.34.2.139>

Appel, H., Gerlach, A. L., & Crusius, J. (2016). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology*, 9, 44–49. <https://doi.org/10.1016/j.copsyc.2015.10.006>

Appel, M., Marker, C., & Gnambs, T. (2020). Are social media ruining our lives? A review of meta-analytic evidence. *Review of General Psychology*, 24(1), 60–74. <https://doi.org/10.1177/1089268019880891>

Bailey, E. R., Matz, C. M., Youyou, W., & Iyengar, S. S. (2020). Authentic self-expression on social media is associated with greater subjective well-being. *Nature Communications*, 11, 4889.

Baldwin, M., & Mussweiler, T. (2018). The culture of social comparison. *Proceedings of the National Academy of Sciences*, 115(39). <https://doi.org/10.1073/pnas.1721555115>

Baskerville, R. F. (2003). Hofstede never studied culture. *Accounting, Organizations and Society*, 28(1), 1–14. [https://doi.org/10.1016/S0361-3682\(01\)00048-4](https://doi.org/10.1016/S0361-3682(01)00048-4)

Best, P., Manktelow, R., & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review*, 41, 27–36. <https://doi.org/10.1016/j.childyouth.2014.03.001>

Beyens, I., Pouwels, J. L., van Driel, I. I., Keijsers, L., & Valkenburg, P. M. (2020). The effect of social media on well-being differs from adolescent to adolescent. *Scientific Reports*, 10(1), Article 10763. <https://doi.org/10.1038/s41598-020-67727-7>

Bij de Vaate, N. A. J. D., Veldhuis, J., & Konijn, E. A. (2020). How online self-presentation affects well-being and body image: A systematic review. *Telematics and Informatics*, 47, Article 101316. <https://doi.org/10.1016/j.tele.2019.101316>

Bij de Vaate, N. A. J. D., Veldhuis, J., & Konijn, E. A. (2021, May 27–31). Types of social media use in relation to mental health and body image [conference presentation]. In *International Communication Association (ICA), virtual conference*.

Boers, E., Afzali, M. H., Newton, N., & Conrod, P. (2019). Association of screen time and depression in adolescence. *JAMA Pediatrics*, 173(9), 853. <https://doi.org/10.1001/jamapediatrics.2019.1759>

Boer, M., van den Eijnden, R. J. J. M., Boniel-Nissim, M., Wong, S.-L., Inchley, J. C., Badura, P., Craig, W. M., Gobina, I., Kleszczewska, D., Klansček, H. J., & Stevens, G. W. J. M. (2020). Adolescents' intense and problematic social media use and their well-being in 29 countries. *Journal of Adolescent Health*, 66(6), S89–S99. <https://doi.org/10.1016/j.jadohealth.2020.02.014>

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, 9(2), 233–255. [https://doi.org/10.1207/S15328007SEM0902\\_5](https://doi.org/10.1207/S15328007SEM0902_5)

Chua, T. H. H., & Chang, L. (2016). Follow me and like my beautiful selfies: Singapore teenage girls' engagement in self-presentation and peer comparison on social media. *Computers in Human Behavior*, 55, 190–197. <https://doi.org/10.1016/j.chb.2015.09.011>

Cohen, R., Newton-John, T., & Slater, A. (2018). 'Selfie'-objectification: The role of selfies in self-objectification and disordered eating in young women. *Computers in Human Behavior*, 79, 68–74. <https://doi.org/10.1016/j.chb.2017.10.027>

Coyne, S. M., Rogers, A. A., Zurcher, J. D., Stockdale, L., & Booth, M. (2020). Does time spent using social media impact mental health? An eight year longitudinal study. *Computers in Human Behavior*, 104, Article 106160. <https://doi.org/10.1016/j.chb.2019.106160>

Cummins, R. A., & Gullone, E. (2000). *Why we should not use 5-point Likert scales: The case for subjective quality of life measurement* (pp. 74–93).

Curran, P. J., & Bauer, D. J. (2011). The disaggregation of within-person and between-person effects in longitudinal models of change. *Annual Review of Psychology*, 62(1), 583–619. <https://doi.org/10.1146/annurev.psych.093008.100356>

Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95(3), 542–575.

Dienlin, T., & Johannes, N. (2020). The impact of digital technology use on adolescent well-being. *Dialogues in Clinical Neuroscience*, 22(2), 135–142. <https://doi.org/10.31887/DCNS.2020.22.2/dienlin>

van Driel, I. I., Giachanou, A., Pouwels, J. L., Boeschoten, L., Beyens, I., & Valkenburg, P. M. (2021). *Promises and pitfalls of social media data donations [Preprint]. Open Science Framework*. <https://doi.org/10.31219/osf.io/kqrq9>

Ellison, N. B., Pyle, C., & Vitak, J. (2022). Scholarship on well-being and social media: A sociotechnical perspective. *Current Opinion in Psychology*, 46, Article 101340. <https://doi.org/10.1016/j.copsyc.2022.101340>

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117–140. <https://doi.org/10.1177/001872675400700202>

Fox, J., & Rooney, M. C. (2015). The Dark Triad and trait self-objectification as predictors of men's use and self-presentation behaviors on social networking sites. *Personality and Individual Differences*, 76, 161–165. <https://doi.org/10.1016/j.paid.2014.12.017>

Gonzales, A. L., & Hancock, J. T. (2008). Identity shift in computer-mediated environments. *Media Psychology*, 11(2), 167–185. <https://doi.org/10.1080/15213260802023433>

Grabe, S., Ward, L. M., & Hyde, J. S. (2008). The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological Bulletin*, 134(3), 460–476. <https://doi.org/10.1037/0033-2909.134.3.460>

Grecal, A. M. L., & Lopez, N. (1998). Social Anxiety among adolescents: Linkages with peer relations and friendships. *Journal of Abnormal Child Psychology*, 26(2), 83–94. <https://doi.org/10.1023/A:1022684520514>

Greenspoon, P. J., & Saklofske, D. H. (2001). Toward an integration of subjective well-being and psychopathology. *Social Indicators Research*, 54(1), 81–108. <https://doi.org/10.1023/A:1007219227883>

Grieve, R., & Watkinson, J. (2016). The psychological benefits of being authentic on Facebook. *Cyberpsychology, Behavior, and Social Networking*, 19(7), 420–425. <https://doi.org/10.1089/cyber.2016.0010>

Gudykunst, W. B. (1997). Cultural variability in communication: An introduction. *Communication Research*, 24, 327–348. <https://doi.org/10.1177/009365097024004001>

Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods*, 20(1), 102–116. <https://doi.org/10.1037/a0038889>



- Schemer, C., Masur, P. K., & Geiß, S. (2020). The impact of internet and social media use on well-being: A longitudinal analysis of adolescents across nine years. *Journal of Computer-Mediated Communication*, 1–21. <https://doi.org/10.1093/jcmc/zmaa014>
- Schreurs, L., Meier, A., & Vandenbosch, L. (2021). Exposure to the positivity bias and adolescents' differential longitudinal links with inspiration and envy depending on social media literacy. OSF. <https://osf.io/am2dj>.
- Sherlock, M., & Wagstaff, D. L. (2019). Exploring the relationship between frequency of Instagram use, exposure to idealized images, and psychological well-being in women. *Psychology of Popular Media Culture*, 8(4), 482–490. <https://doi.org/10.1037/ppm0000182>
- Statista. (2022). Instagram: Distribution of global audiences 2022, by age group <https://www.statista.com/statistics/325587/instagram-global-age-group/>.
- Stevic, A., Schmuck, D., Matthes, J., & Karsay, K. (2019). 'Age matters': A panel study investigating the influence of communicative and passive smartphone use on well-being. *Behaviour & Information Technology*, 1. <https://doi.org/10.1080/0144929X.2019.1680732>. –15.
- Tiggemann, M., Anderberg, I., & Brown, Z. (2020). Uploading your best self: Selfie editing and body dissatisfaction. *Body Image*, 33, 175–182. <https://doi.org/10.1016/j.bodyim.2020.03.002>
- Tiidenberg, K., & Gómez Cruz, E. (2015). Selfies, image and the re-making of the body. *Body & Society*, 21(4), 77–102. <https://doi.org/10.1177/1357034X15592465>
- Tsay-Vogel, M., & Krakowiak, K. M. (2019). The virtues and vices of social comparisons: Examining assimilative and contrastive emotional reactions to characters in a narrative. *Motivation and Emotion*, 43(4), 636–647. <https://doi.org/10.1007/s11031-019-09756-y>
- Twenge, J. M. (2020). Commentary: Screens, teens, and psychological well-being: Evidence from three time-use-diary studies. *Frontiers in Psychology*, 11, 1–3. <https://doi.org/10.3389/fpsyg.2020.00181>
- Twenge, J. M., & Martin, G. N. (2020). Gender differences in associations between digital media use and psychological well-being: Evidence from three large datasets. *Journal of Adolescence*, 79, 91–102. <https://doi.org/10.1016/j.adolescence.2019.12.018>
- Twomey, C., & O'Reilly, G. (2017). Associations of self-presentation on facebook with mental health and personality variables: A systematic review. *Cyberpsychology, Behavior, and Social Networking*, 20(10), 587–595. <https://doi.org/10.1089/cyber.2017.0247>
- Valkenburg, P. M. (2022). Social media use and well-being: What we know and what we need to know. *Current Opinion in Psychology*, 45, Article 101294. <https://doi.org/10.1016/j.copsyc.2021.12.006>
- Valkenburg, P. M., & Peter, J. (2013). The differential susceptibility to media effects model. *Journal of Communication*, 63(2), 221–243. <https://doi.org/10.1111/jcom.12024>
- Valkenburg, P. M., Peter, J., & Walther, J. B. (2016). Media effects: Theory and research. *Annual Review of Psychology*, 67(1), 315–338. <https://doi.org/10.1146/annurev-psych-122414-033608>
- Valkenburg, P. M., van Driel, I. I., & Beyens, I. (2022). *The associations of active and passive social media use with well-being: A critical scoping review* (pp. 1–20). New Media & Society. <https://doi.org/10.1177/14614448211065425>
- Vandenbosch, L., Fardouly, J., & Tiggemann, M. (2022). Social media and body image: Recent trends and future directions. *Current Opinion in Psychology*, 45, Article 101289. <https://doi.org/10.1016/j.copsyc.2021.12.002>
- Vannucci, A., & McCauley Ohannessian, C. (2019). Social media use subgroups differentially predict psychosocial well-being during early adolescence. *Journal of Youth and Adolescence*, 48(8), 1469–1493. <https://doi.org/10.1007/s10964-019-01060-9>
- Veldhuis, J., Konijn, E. A., & Knobloch-Westerwick, S. (2017). Boost your body: Self-improvement magazine messages increase body satisfaction in young adults. *Health Communication*, 32(2), 200–210. <https://doi.org/10.1080/10410236.2015.1113482>
- Veldhuis, J., Konijn, E. A., & Seidell, J. C. (2014). Negotiated media effects. Peer feedback modifies effects of media's thin-body ideal on adolescent girls. *Appetite*, 73, 172–182. <https://doi.org/10.1016/j.appet.2013.10.023>
- Verbeij, T., Pouwels, J. L., Beyens, I., & Valkenburg, P. M. (2021). The accuracy and validity of self-reported social media use measures among adolescents. *Computers in Human Behavior Reports*, 3, Article 100090. <https://doi.org/10.1016/j.chbr.2021.100090>
- Verduyn, P., Ybarra, O., Résibois, M., Jonides, J., & Kross, E. (2017). Do social network sites enhance or undermine subjective well-being? A critical review. *Social Issues and Policy Review*, 11(1), 274–302. <https://doi.org/10.1111/sipr.12033>
- Voronov, M., & Singer, J. A. (2002). The myth of individualism-collectivism: A critical review. *The Journal of Social Psychology*, 142(4), 461–480. <https://doi.org/10.1080/00224540209603912>
- Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research*, 23(3), 3–43. <https://doi.org/10.1177/009365096023001001>
- Wang, K., Frison, E., Eggermont, S., & Vandenbosch, L. (2018a). Active public Facebook use and adolescents' feelings of loneliness: Evidence for a curvilinear relationship. *Journal of Adolescence*, 67, 35–44. <https://doi.org/10.1016/j.adolescence.2018.05.008>
- Wang, J.-L., Gaskin, J., Rost, D. H., & Gentile, D. A. (2018b). The reciprocal relationship between passive Social Networking Site (SNS) usage and users' subjective well-being. *Social Science Computer Review*, 36(5), 511–522. <https://doi.org/10.1177/0894439317721981>
- Wang, Y., Xie, X., Fardouly, J., Vartanian, L. R., & Lei, L. (2019). *The longitudinal and reciprocal relationships between selfie-related behaviors and self-objectification and appearance concerns among adolescents* (Vol. 146144481989434). New Media & Society. <https://doi.org/10.1177/1461444819894346>
- Wartella, E. A., & Jennings, N. (2000). Children and computers: New technology. Old concerns. *The Future of Children*, 10(2), 31. <https://doi.org/10.2307/1602688>
- Wartella, E. A., & Reeves, B. (1985). Historical trends in research on children and the media: 1900–1960. *Journal of Communication*, 35(2), 118–133. <https://doi.org/10.1111/j.1460-2466.1985.tb02238>
- Wheless, L. R. (1976). Self-disclosure and interpersonal solidarity: Measurement, validation, and relationships. *Human Communication Research*, 3(1), 47–61. <https://doi.org/10.1111/j.1468-2958.1976.tb00503.x>
- Wheless, L. R. (1978). A follow-up study of the relationship among trust, disclosure, and interpersonal solidarity. *Human Communication Research*, 4(2), 143–157. <https://doi.org/10.1111/j.1468-2958.1978.tb00604.x>
- Yang, C., & Brown, B. B. (2016). Online self-presentation on Facebook and self development during the college transition. *Journal of Youth and Adolescence*, 45(2), 402–416. <https://doi.org/10.1007/s10964-015-0385-y>