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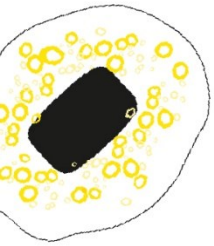

Believing that you can handle negative news:

incidental negative news exposure on Instagram, well-being, and the moderation by self-efficacy

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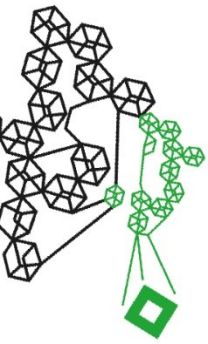

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Abstract

Instagram users are often incidentally exposed to negative news, which can cause stress and reduce well-being. Self-efficacy has been connected to lower stress levels and increased well-being, suggesting that self-efficacy might moderate the relationship between incidental negative news exposure and well-being. A pre-post experiment with a control and experimental group was conducted to measure the effects of incidental negative news exposure on well-being. The participants (n = 211) were told that the study was measuring the relationship between social media and well-being to make incidental exposure possible. 105 participants were exposed to a neutral artificial Instagram feed, which contained ten lifestyle-related posts from several mock accounts. 106 participants were incidentally exposed to negative climate news posts in-between the neutral posts. Self-efficacy was measured with the self-efficacy subscale of the PCQ, and well-being scores were measured with the MHC-SF. Two paired t-tests and a moderation analysis with self-efficacy as the moderator were run. For both groups, there was a significant decline in well-being, with the experimental group having a larger decline. The moderation by self-efficacy was insignificant. Ultimately, it is unlikely that the incidental exposure to negative news significantly impacted well-being. Self-efficacy was not a moderator. The current sample was possibly affected by self-comparison and jealousy, which is typical for Instagram and can decrease well-being. Mindfulness exercises for Instagram users should be considered to counteract these effects. Due to the frequent media coverage of climate change, issue fatigue might have influenced the results, which could be avoided in future research by using underreported news. Future studies could explore repeated exposure and subgroup differences regarding incidental climate news exposure. The role of self-efficacy needs to be investigated further.

Keywords: Incidental negative news exposure, self-efficacy, Instagram, climate news

Introduction

Interactions and personal contact with others is frequently done with the help of social media (Boczkowski et al., 2018). In the current years, there has been an uprise in the use of social media (Greenwood et al., 2016). A popular social media environment is the content-sharing platform Instagram, which counted over a billion users worldwide in 2020 (eMarketer, 2020). Instagram is being used by many young adults, but middle-aged adults also make up a large part of the 9 million Dutch Instagram users (NapoleonCat, 2022). Therefore, it seems that the platform Instagram has been reaching users from different age groups. Additionally, the use of smartphones has become very widespread, which makes it possible to access Instagram with just a few hand movements from any location (Boczkowski et al., 2018; Wang et al., 2014). Thus, Instagram is widely used by young and older adults alike, and the spread of smart technology makes the platform easily accessible.

Social media platforms such as Instagram use personalized algorithms that provide their users with similar content to what they frequently interact with (Fletcher & Nielsen, 2017). The algorithms also automatically place external content on their feeds, which is matched with the user profile based on cookie data (Cotter, 2018; Fletcher & Nielsen, 2017; Swart, 2021). Moreover, users can see activities and posts of their friends on their feeds (Lee & Kim, 2017; Milan, 2015). Consequently, social media users are frequently confronted with content that they were not looking for, especially if their virtual friend circle consists of many differing opinions and interests (Fletcher & Nielsen, 2017; Lee & Kim, 2017). Coming across certain content without consciously looking for it is called incidental media exposure (Kim et al., 2013). There is an increasing amount of news outlets on social media, which is part of the reason why incidental news exposure frequently takes place on social media platforms (Ahmadi & Wohn, 2018; Boczkowski et al., 2018; Greenwood et al., 2016; Hong, 2012). Since Instagram algorithms influence the content of the feed and show friend activities and

stories, users are incidentally exposed to news frequently (Cotter, 2018; Kwon, 2020). Additionally, the more time is spent scrolling on social media platforms, the higher the likelihood of incidental news exposure (Ahmadi & Wohn, 2018; Lee & Kim, 2017). The frequency of incidental news exposure on Instagram gives reason to explore if and how users are affected by it.

While previous research has focused mainly on Facebook and the effect of incidental news exposure on political engagement or learning, there is little research on the implications that such exposure has in the context of Instagram (Goyanes & Demeter, 2022). The research of Kwon (2020) and Yamamoto and Corey (2019) are one of the few papers which explore incidental news exposure on Instagram. Yamamoto and Corey (2019) considered the possibility that the incidental exposure to negative news affects Instagram users differently than the incidental exposure to neutral or positive news. In line with that, Soroka and McAdams (2015) argue that negative news has a bigger impact on people and tends to be remembered better, due to humans having a bias towards negative content and reacting more emotionally to it. Being aware of this negativity bias, headlines and content of news articles are often consciously chosen to be negative, resulting in an imbalance between positive-sounding and negative-sounding news (Soroka & McAdams, 2015). Among the current frequently mentioned topics are the Covid-19 pandemic, conflicts between countries, polarized elections, or climate change (CNN, 2022). Especially the latter is a growing problem and a potential threat for the whole world, as it has been leading to issues in global food security, air pollution, and extreme weather such as flooding (De Sario et al., 2013; Wheeler & von Braun, 2013). Instagram users might be incidentally exposed to such news, potentially affecting them strongly due to the negativity bias.

Earlier studies have explored the potential effects of incidental negative news exposure on the internet, including social media and other websites. Firstly, it can cause

anxiety and stress in the readers (Jain, 2021; McNaughton-Cassil, 2001; Partington, 2014). In a study conducted by Jain (2021), it was found that people who were not intentionally looking for Covid-19-related news felt more stress than those who had the aim to be informed. Stress caused by incidental news exposure has the potential to significantly affect social media users' well-being (Jain, 2021). In several studies, focusing on children, adolescents, and older adults, it was reported that perceived stress was negatively correlated with well-being (Geslani & Gaebelein, 2013; Krause, 1986; Moeini et al., 2008). Next to that, the more often people were exposed to news, the stronger the deteriorating effect was on their well-being (Jain, 2021). When applying these findings to Instagram, incidental exposure to negative news on the platform can possibly cause stress and negatively affect the users' well-being.

Self-efficacy is a trait which could counteract the negative effects on well-being (Moeini et al., 2008; Riolli et al., 2012; Varghese et al., 2015). Self-efficacy refers to whether someone believes they have the capability to reach certain goals, and it is a predictor of effort, performance, resilience to stress, hopelessness and burn-out (Bandura, 1994; Heslin & Klehe, 2006; Lee & Yang, 2019). In a study conducted by Moeini et al. (2008), significant relationships were not just found between stress and well-being, but also between stress, well-being and self-efficacy. In challenging life situations, a person with higher levels of self-efficacy is more confident that they can deal with the difficult circumstances at hand, thus increasing their ability to cope with stressors (Varghese et al., 2015). Supporting these findings, Moeini et al. (2008) found that high levels of self-efficacy were related to increased well-being, and lower levels of self-efficacy were significantly correlated to higher levels of perceived stress. Furthermore, Riolli et al. (2012) found that Psychological Capital can act as a buffer to stress. Psychological Capital is made up of self-efficacy and similar traits that help humans cope in difficult situations, namely hope, resilience and optimism. Based on these

studies, self-efficacy is a trait that appears to be positively affecting well-being while negatively affecting stress (Riolli et al., 2012).

Study Purpose

The fast growth of Instagram creates a breeding ground for incidental exposure to negative and devastating news, but there is a lack of research on the effects of incidental negative news exposure on Instagram users (Goyanes & Demeter, 2022; Greenwood et al., 2016). Since the incidental exposure to negative news was linked to stress and reduced well-being in previous studies (Jain, 2021), there is an incentive to explore this relationship in the context of Instagram. The findings of Moeini et al. (2008) and others might be relevant too, since their results suggested that self-efficacy has a positive relationship with well-being while also negatively affecting the amount of perceived stress (Varghese et al., 2015). Self-efficacy might thus act as a moderator of the relationship between incidental negative news exposure on Instagram and the well-being of the users, meaning that users with high levels of self-efficacy would be less negatively affected by the incidental exposure to negative news.

Research Questions and Hypotheses

The current study aims to expand on existing research and explore whether incidental negative news exposure on Instagram leads to decreased well-being, and whether this relationship is moderated by self-efficacy. A schematical representation of the hypothesized model is displayed in Figure 1. Two research questions were investigated. The first one was: To what extent does the incidental exposure to negative news on Instagram affect the participants' well-being? The second research question was: To what extent is the relationship between incidental negative news exposure and well-being moderated by self-efficacy?

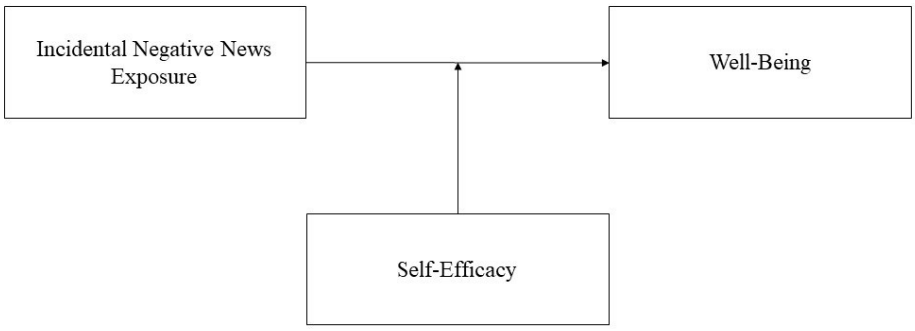
An experiment was conducted to test the two following hypotheses:

H1: Participants who are incidentally exposed to negative news on Instagram experience a greater decline in well-being than participants who are exposed to neutral stimuli only.

H2: Self-efficacy moderates the relationship between incidental negative news exposure and well-being.

Figure 1

Scheme of Hypothesized Model



Methods

Design

This randomized control trial employed a pre-and-post and between-subjects design. In total, there were two conditions: One experimental group, which was incidentally exposed to negative news, and one control group, which was subjected to neutral stimuli. The independent variable was incidental negative news exposure and well-being was the dependent variable. Self-efficacy was hypothesized to be the moderating variable. This study has been approved by the ethical committee of the University of Twente with the request number 220301.

Participants

Convenience sampling was used. Partly, participants were recruited through the SONA-system of the University of Twente. The SONA system is an online environment in which students can sign up to participate in scientific research of other students. In return, they receive mandatory subject hour points which are required for the completion of their study. Additionally, acquaintances and friends were contacted in real life or via WhatsApp and asked to participate and share the study with others. Lastly, the researchers posted a link to the survey on Instagram to attract Instagram users, and on Reddit, as there are communities in which scientific questionnaires are shared among users. A prerequisite for participation in the study was the minimum age of 18 years, to ensure that the participants themselves can give their consent. Another requirement was sufficient English competency to ensure that the participants comprehended the content of the exclusively English questionnaire.

Materials

Qualtrics.com was used as a platform for administering the questionnaire. The first component was an informed consent form (see Appendix A). The main part of the survey included demographic questions regarding the participants' age, gender, and nationality (see Appendix B). Following that, all items of the Mental Health Continuum Short Form and the Psychological Capital Questionnaire were displayed to the participant (see Appendix C). Thereafter, an Instagram feed was embedded into Qualtrics, followed by the Mental Health Continuum Short Form again (see Appendix D, Appendix E, & Appendix F).

The questionnaire also included two control questions: the first one was displayed before the debriefing, asking the participant to summarize the content of the Instagram feed they had just seen (see Appendix F). This question also served the purpose of checking the participants' English proficiency and their comprehension of the questionnaire. The second control question was displayed at the end of the survey after the debriefing. It was asked whether the participants had guessed the true nature of the study before seeing the debriefing form (see Appendix G). At the end of the survey, the participants received a debriefing form (see Appendix G). Appendix A to G can be combined to represent the exact layout of the Qualtrics survey used in this experiment, using either Appendix D for the neutral feed or Appendix E for the experimental feed.

Instagram Feed

Due to its popularity among all age groups and the lack of research regarding incidental negative news exposure on the platform, Instagram was chosen as basis for the survey (Goyanes & Demeter, 2022; We Are Social et al., 2022). To reach young participants, the platform SONA was employed, which is mostly used by young undergraduate adults. The social circle of the researchers included young adults as well as middle-aged adults. This

ensured that participants from all age groups were targeted, seeing that the age demographics of Instagram users are becoming more diverse (We Are Social et al., 2022). In total, four fake Instagram profiles were created by the research group. For this purpose, copyright free images form the website "Unsplash" were used (Unsplash, 2022). The accounts represented two female and two male young fictional characters.

The posts concerned topics such as travel, photography, a wedding, a new haircut, activities with friends, and pets. The choice of content was based on the most popular hashtags of Instagram in 2019, e.g. love, which is represented by the wedding post, beauty, travel, and photography (InfluencerDB, 2019). It can be assumed that most Instagram users follow multiple accounts, as the most common reasons for Instagram use in the US are keeping in touch with friends and family or staying updated of others' activities (Statista, 2020). This would result in an Instagram feed on which posts from several people are shown, not just from one person. To imitate the diversity and variety of a real Instagram feed, two or three posts of each profile were shown in the survey, but not right after another. Screenshots of the artificial posts were taken, and their originally very low number of likes were edited to be higher to create the illusion that the accounts were owned by real humans with a social circle. Moreover, the screenshots were taken at different times, so the timestamp at the bottom of the post would not be identical for all posts. This way, the illusion was created that the posts were uploaded at different times, so the artificial nature of the posts and accounts would not become evident (see Appendix D & Appendix E).

Regarding the control condition, ten screenshots of neutral Instagram posts of the fake accounts were chosen. To create an experimental condition in which the participants are incidentally exposed to negative news, climate change news were chosen due to their frequent news coverage and the devastating consequences in many parts of the world (De Sario et al., 2013; Schmidt et al., 2013; Wheeler & von Braun, 2013). Two posts from the British news

company “The Guardian” about catastrophic natural events due to the climate crisis were added to the fictional Instagram feed (The Guardian, 2021a; The Guardian, 2021b). The first post shows picture of wildfires and refers to the emergency to take action to prevent the climate crisis and the other one shows people suffering from floods (see Appendix E). These posts were chosen due to The Guardian’s status as a quality newspaper, and due to the graphic nature of the posts, which displayed burning forests and people submerged in brown-coloured water after a flood.

The first screenshot was placed as the 4th image in the feed, so the participant could first immerse into the neutral Instagram feed before being confronted with negative news. Another reason for this placement was to not make the negative news exposure too immediate and obvious, otherwise the participant might have suspected the real aim of the study early on. The second screenshot was placed at the end of the feed to make use of a potential recency effect, which is the human tendency to have better memory of recently shown stimuli (Logie, 2003). The recency effect was expected to strengthen the impact of the news posts on the participants and make them remember it more clearly when filling out the rest of the questionnaire. Attempting to increase the impact of the incidental news exposure further, it was decided to include two posts of negative news, since repeated exposure is associated with a better memory and processing of the stimulus (Palumbo et al., 2021). The placement and quantity of the news posts were decided with the aim to maximize the impact of the climate news, because the exposure to incidental negative news was only very brief.

Mental Health Continuum Short Form (MHC-SF)

The well-being of the participants was measured using the Mental Health Continuum-Short Form (MHC-SF). It consists of 14 items and measures emotional, psychological, and social well-being, which represent the three dimensions of mental health (Lamers et al., 2011). The participants rated the prevalence of their feelings in the last month on a six-point

Likert scale ranging from *0= 'Never'* to *5= 'Every Day'*. An example question is: "In the past month, how often did you feel interested in life?". The total internal reliability is high (α = .89), and the test-retest reliability is moderate (Lamers et al., 2011). In this current study, the internal reliability of the total scale was excellent for both the pre-measurement (α = .90) and the post-measurement (α = .91). The constructs measured by the MHC-SF have been validated in representative samples of multiple countries (Lamers et al., 2011).

Self-Efficacy

For measuring the participants' self-efficacy, the self-efficacy subscale of the Psychological Capital Questionnaire (PCQ) by Luthans et al. (2007) was used and adapted to the context of the participants. The remaining items of the PCQ were also displayed to the participants for parallel research. The self-efficacy subscale of the PCQ consists of 6 items. A Likert scale of 6 is used, with answer options ranging from 1 = *'Strongly Disagree'* to 6= *'Strongly Agree'*. Statements such as "I feel confident analysing a long-term problem to find a solution" are to be rated. Scores can range from 6 to 36. The higher the score, the higher are the overall levels of self-efficacy in that respondent (Luthans et al., 2007). For the self-efficacy subscale of the PCQ, the internal reliability in terms of Cronbach's alpha is α=.87, indicating a high internal reliability (Liran & Miller, 2019). In terms of validity, respondents' scores on the PCQ have been related to workplace performance, job satisfaction, and other real-life work-related measurements (Luthans et al., 2007). Since the current research was aimed at incidental negative news exposure in the general context, the wordings of the items were modified. Most original items contained the word 'work', which was either replaced by 'life' or removed from the statement to make the items more general (see Appendix H). The overall reliability of the modified PCQ-scale was high (α = .91). The internal reliability of the modified self-efficacy subscale was acceptable (α = .79). There was no revalidation of the adapted subscale, as it was beyond the scope of this current study.

Procedure

A group of four researchers conducted this study, each focusing on a different Psychological Capital variable. The research was conducted through the online platform Qualtrics, and it took approximately 15 minutes to fill in the survey. First, the participants were provided with an informed consent they needed to agree on to participate in the study. In the consent form, it was clarified that all data would be processed anonymously, and that participation was entirely voluntary and could be stopped at any time.

To keep the news exposure incidental, the informed consent form did not include the fact that negative news would be shown. This had been approved by the ethical committee since it was a necessary aspect to measure incidental news exposure. Instead, it was explained to the participants that the research would be about social media and mental health. Within the informed consent, the term Psychological Capital was shortly explained, so that the participants were aware that they would answer questions related to this concept, otherwise they might have felt confused by the questions. However, the information about Psychological Capital was very brief to keep the true nature of the study concealed. The study started by asking the participants to fill in their demographic characteristics, in particular gender, age, and nationality. Subsequently, participants filled in the MHC-SF to measure their well-being. Next, the PCQ followed to determine the participants' degree of self-efficacy.

A randomizer function in Qualtrics assigned the participants evenly to either the control group or the experimental condition. The images were embedded in Qualtrics underneath each other so it creates the illusion of a continuous, scrollable feed. These measures were taken to imitate the set-up and feel of Instagram as much as possible. The control group was exposed to an Instagram feed which only included neutral posts. In the experimental condition, participants were exposed to an Instagram feed that included news

posts about natural disasters due to the climate crisis from ‘The Guardian’.

After the stimuli were presented, the well-being of the participants was assessed a second time by using the MHC-SF. Next, the participants were shortly asked to summarise the type of posts of the Instagram feed. This was done to establish whether participants paid sufficient attention to the posts presented to them. The participants were debriefed on what the purpose of the study was and were provided with contact information of the researchers, which gave the participants the opportunity to contact the researcher in case they had questions. Due to the prior incomplete information, participants were asked to confirm their consent. If they did not agree on the final consent form, their data was excluded from the analysis. After the debriefing, the question was asked whether the participants had guessed the real purpose of the study beforehand. Lastly, the respondents were thanked for their participation.

Analysis

IBM SPSS Statistics 28 was used as a statistical tool to analyze the data. Before the data analysis was conducted, the sample was inspected and prepared. Respondents who were underage, had not given consent or had not filled out all questions were removed from the sample. Test responses which were collected before the official start of the survey were also excluded from the sample. In total, 50 responses were excluded. Frequency tables were used to inspect the results of the demographic questions. Additionally, the data set was explored in terms of the four assumptions of linear regression.

To compute participants’ well-being scores, all 14 items of the MHC-SF were summated, and the mean was calculated. For self-efficacy, the total scores of the self-efficacy subscale were summated. Regarding the first hypothesis, two paired t-tests were run to inspect the difference between pre- and post-well-being per group. To analyze whether self-efficacy acts as a moderator in the relationship between incidental negative news exposure and well-

being, the PROCESS macro add-on by Andrew F. Hayes was used for the second hypothesis (Hayes, 2022). For making judgements about statistical significance, $p > .05$ was used as a cut-off point.

Results

Participants

Characteristics

261 responses in total were collected. 22.9% of responses were excluded. Therefore, the final sample consisted of $n = 211$. 105 of these participants were part of the control group, and 106 participants belonged to the experimental condition. The age of the participants ranged from 18 to 66 years ($M = 22.5$, $SD = 5.76$). In total, participants from 34 countries took part in this study. Remaining characteristics of the participants are summarized in Table 1.

Table 1

Participant Characteristics in Total Numbers and Percentages

Characteristic	n	%
Condition		
Control	105	49.8
Experimental	106	50.2
Gender		
Female	148	70.1
Male	61	28.9
Non-Binary / Third Gender	2	0.9
Nationality		
German	117	55.5
Dutch	45	21.3
Other	49	23.2

Control questions

Regarding the first control question, which asked participants to summarize the content of the feed in their own words, all 211 participants gave fitting answers. The distribution of answers to the second control question, “did you guess the true purpose of this study before reading the debriefing form?” can be seen in Table 2.

Table 2

Participant's Answers to the Second Control Question by Condition

Condition	Yes	No
Control	40	65
Experimental	66	40

Assumptions of Linear Regression

Since the moderation analysis consists of a regression, it was checked whether the data fulfilled the four assumptions of linear regression: normality, linearity, homoscedasticity, and the absence of multicollinearity.

First, the variables were inspected in terms of their normality. Since the manual of the MHC-SF refers to the total scale score as 'positive mental health', this is also the name of the variable in SPSS. P-P plots of the variables self-efficacy, pre-positive-mental-health and post-positive-mental-health were drawn to inspect the normality of data. As can be seen in Appendix I, the data was approximately normal.

For testing the homoscedasticity assumption, Levene's test was run for the variables self-efficacy, pre-well-being, and post-well-being. The Levene statistic based on the median was insignificant for all three variables, therefore indicating that their variances were approximately equal for both conditions (see Appendix K). The assumption of linearity was automatically fulfilled due to the independent variable being binary, as there were only two points of data which can be connected by a straight line. Finally, the absence of multicollinearity was investigated with VIF-values. For pre-well-being, post-well-being and self-efficacy, the VIF values were exactly 1, which means that there were no signs of multicollinearity. Therefore, all four assumptions required for linear regression were met.

Well-Being Before and After Seeing the Feed

To test the hypothesis that participants who were exposed to negative incidental news exposure on social media have a stronger decline in well-being compared to the control group, paired-t-tests for each condition were run. The results are summarized in Table 3.

In the experimental group, there was a significant decline in well-being from the pre-test scores ($M = 3.00$, $SD = 0.86$) to the post-test scores ($M = 2.88$, $SD = 0.90$), $t(105) = 4.53$, one-sided $p < .001$, two-sided $p < .001$. In the control group, there was also a significant decline in well-being when comparing the pre-test scores ($M = 3.08$, $SD = 0.84$) to the post-test scores ($M = 3.02$, $SD = 0.92$), $t(104) = 2.42$, one-sided $p = .009$, two-sided $p = .017$. As the decline in the experimental condition is larger, the first hypothesis is accepted.

Table 3

Paired t-test Results Comparing Experimental and Control Group on Pre-Post Well-being

	n	Pre-Wellbeing		Post-Wellbeing		p	
		Mean	SD	Mean	SD	One-sided	Two-sided
Experimental	106	3.00	0.86	2.88	0.90	<.001	<.001
Control	105	3.08	0.84	3.02	0.92	.009	.017

Moderation Analysis

To test the hypothesis that self-efficacy moderates the relationship between incidental negative news exposure and well-being, a regression analysis with the add-on PROCESS macro by Hayes was run in SPSS (Hayes, 2022). Model 1 for moderation was used. The independent variable was the control and experimental condition, while the dependent variable was the post-well-being score. Self-efficacy (M=25.78, SD=4.93) was included as the moderator variable.

The overall model was significant, $R^2 = .31$, $p = .00$. The participants' condition did not have a significant effect on well-being in this model, B = -0.02, t(207) = -0.03, p = .98. Self-efficacy by itself had a significant effect on well-being, B = 0.10, t(207) = 6.89, p = .00. The effect of self-efficacy as a moderator was insignificant, B = 0.00, t(207) = - 0.05, p = .96. Due to the insignificant moderation by self-efficacy, the second hypothesis is rejected. The results are summarized in Table 4 and Figure 2.

Table 4

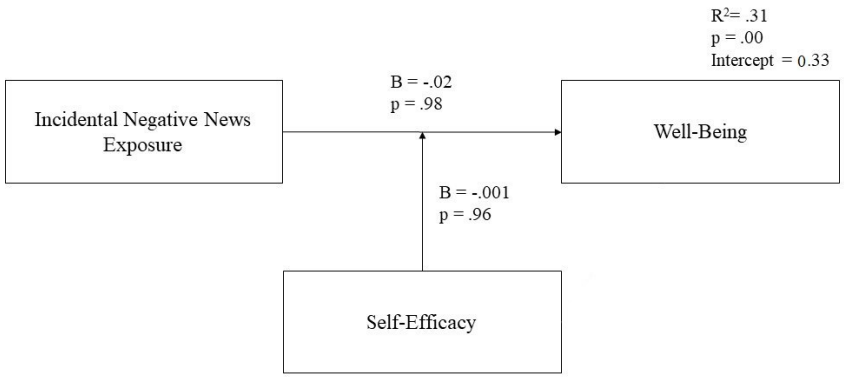
Results of the Moderation Analysis

Variable	B	p
Intercept	0.33	.41
Condition	-0.02	.98
Self-efficacy	0.10	.00
Self-efficacy (Moderator)	0.00	.96

Note. $R^2 = .31$

Figure 2

Scheme of Hypothesized Model with Results



Discussion

Due to the increased use of Instagram and the workings of social media algorithms, Instagram users are frequently incidentally exposed to news (Boczkowski et al., 2018). Negative incidental news exposure can cause stress and anxiety, which are factors that negatively affect people's well-being (Jain, 2021; McNaughton-Cassil, 2001; Partington, 2014). Self-efficacy is a trait characterized by a person's confidence in their own abilities (Riolli et al., 2012). In multiple studies, self-efficacy was linked to an improved well-being and a reduced impact of stress on well-being (Moeini et al., 2008; Riolli et al., 2012; Varghese et al., 2015). Based on these findings, the research questions to be investigated in this study were to what extent incidental exposure to negative news on Instagram affects the well-being of the participants, and to what extent this relationship is moderated by self-efficacy. To answer these questions, two hypotheses were tested. The first one pertained to the assumption that the experimental group will experience a greater decline in well-being compared to the control group. The second hypothesis claimed that self-efficacy moderates the relationship between incidental negative news exposure and well-being.

First Hypothesis and Research Question

Two paired t-tests were run to test for the first hypothesis. The paired t-test results showed a significant decline in well-being in both conditions, with the decline in the experimental condition being larger. Therefore, the first hypothesis was accepted. This is consistent with the study of Jain (2021), in which participants experienced more stress when they were confronted with negative news unexpectedly. The results of the moderation analysis conflict with this finding. In the moderation model, the incidental exposure to negative news did not significantly affect the post-well-being levels. This implies that the condition of the participants was not associated with a specific change in well-being, and that

there was a lack of impact of the negative news exposure. Based on the moderation analysis, it would thus be expected that the decline in well-being was approximately the same in both conditions. Moreover, the standard deviations of the well-being-scores were large, indicating that the individual scores were quite diverse (Streiner, 1996). There might have been outliers with very low or very high scores in well-being, which can affect the mean of the total group according to Rumsey (2016). This increases the likelihood that the slightly greater decline in the experimental group might have been a result of random deviation. Regarding the first research question, it is therefore unlikely that the incidental exposure to negative news had a significant impact on the participants' well-being. Nonetheless, there was a significant decline in well-being in both conditions.

Self-Comparison and Jealousy on Instagram

One potential explanation for the decline in both groups is that the exposure to an Instagram feed in general can reduce well-being (Dibb & Foster, 2021; Faelens et al., 2021). This current study confronted the participants with a typical, idealized Instagram feed consisting of filtered images of food, social gatherings, lifestyle, and work life. For Instagram users, it is typical to display their lives in an optimized way, which can cause other users to engage in self-comparison (Faelens et al., 2021). For example, food-related posts on Instagram have the potential to influence users' diets and decrease their body satisfaction due to such self-comparison (Hendrickse et al., 2017; Jin, 2018). Additionally, users might feel envious of other peoples' lifestyles (Chou & Edge, 2012; Dibb & Foster, 2021). Chou and Edge (2012) found that Facebook users experienced jealousy when seeing idealized posts of others, due to believing that most others had better lives than them. One of the posts in the Instagram feed showed a wedding, while other posts were related to travelling. This might trigger jealousy and other negative feelings in participants who have recently separated from a partner, or who have the desire to travel but are unable to. The study of Dibb and Foster

(2021) supports these implications, as they found that participants who feel lonely might experience decreased well-being after seeing the post of a group of friends on vacation. Thus, Instagram posts can lead people to self-compare and become jealous.

As participants can become jealous of multiple types of content, including food-related posts, but also posts related to social gatherings (Dibb & Foster, 2021), it is possible that the posts used for the Instagram feed were not perceived as neutrally as intended. Self-comparison is a marker of reduced well-being, which makes it possible that the mere confrontation with an idealized Instagram feed caused the decline in well-being in both groups (Faelens et al., 2021). Another possibility is that there were individuals in the experimental group who felt more affected by the Instagram feed than others, resulting in a larger general decline, as individual differences can affect the degree of self-comparison and jealousy on social media (Dibb & Foster, 2021). Therefore, the potential detrimental effects of Instagram are a probable explanation for the significant decline in well-being for both groups.

Self-Fulfilling Prophecy

Another explanation for the decline in well-being is the wording of the study description and informed consent form. The participants were told that the study investigated the effect of social media on well-being. It is imaginable that they expected the researchers to hypothesize a negative effect of social media on well-being in general, so they unconsciously adapted to that expectation. This would be an example of a self-fulfilling prophecy (Madon et al., 2011).

Second Hypothesis and Research Question

Regarding the second hypothesis, it was expected that self-efficacy would moderate the relationship between incidental negative news exposure and well-being. This was not the case, as self-efficacy as a moderator did not have a significant effect on the post-well-being

measurements. Consequently, the second hypothesis was rejected. Ultimately, the answer to the second research question is that self-efficacy did not moderate the relationship between incidental negative news exposure and well-being in this study. In general, self-efficacy was shown to have a significant positive effect on well-being. This finding is in accordance with the literature discussed in the introduction, in which self-efficacy was related to increased well-being (Moeini et al., 2008). However, the fact that self-efficacy did not moderate the relationship between incidental news exposure and well-being in this study conflicts with the initial expectations. This provides an incentive to explore possible factors that might have contributed to these unexpected findings.

Issue Fatigue

Issue fatigue is a factor which could have contributed to the lack of impact of the negative news and the insignificant moderation analysis results (Gurr, 2022). Issue fatigue is a phenomenon in which repeated exposure to a news topic can lead to decreased motivation to process information about the topic (Gurr, 2022). In the current study, the mean age of the sample was 22 years. News coverage on climate change has noticeably increased since 1996, making it likely that many participants have regularly been exposed to climate change news (Schmidt et al., 2013). Perhaps the sample of this current study experienced issue fatigue to some extent. This could have led to them being less emotionally affected by the incidental exposure to climate change news if they did not process the news thoroughly (Gurr, 2022). The lack of emotional reaction could also account for the insignificant effect of the negative news exposure on well-being. Consequently, self-efficacy as a buffer to stress would be redundant, which justifies why the moderation by self-efficacy was insignificant.

Remaining findings

First Control Question

All participants gave a fitting description of the Instagram feed for the first control question. This indicates that they likely paid proper attention to the stimuli and did not simply skip to the next part of the survey. Additionally, it displays their English proficiency, which was needed to comprehend the content of the questionnaire.

Second Control Question

Regarding the second control question about guessing the study's real aim, it was striking that a large proportion of the control group participants indicated that they had guessed the real aim of the research. There are several potential explanations for this finding. Firstly, a warning message was displayed above the question on the same side. Participants were warned that they will be automatically redirected to SONA after answering the question. It is possible that the participants did not see the question and clicked on 'Yes' to indicate their understanding of the warning message. Next to that, about half of participants were recruited via University of Twente's SONA system, thus they had an academic background and likely some knowledge about research. The description in the consent form omitted the real study purpose, such as the hypothesized moderation by self-efficacy. The participants were possibly suspecting additional factors of the research, such as that there were two conditions, but not necessarily that incidental news exposure was a factor. These two reasonings might explain the unexpectedly large proportion of 'Yes'-answers in the control group.

Strengths and Limitations

Notable strengths of this study were that the final sample size of 211 was divided equally with around 100 participants per condition, which decreases the risk of a Type 1 Error

occurring (Rusticus & Lovato, 2014). Type 1 errors are situations in which a statistical test shows a significant difference between two populations, although there is no difference in reality. Unequal and small sample sizes increase the risk of Type 1 Errors. As the experimental and control groups in this current study had a large, equal-sized sample, it is less likely that a Type 1 Error occurred (Rusticus & Lovato, 2014). Additionally, almost 80% of all initial respondents could be included, as they responded to all questions and gave fitting answers to the first control question. Therefore, only a small part of all respondents had to be excluded.

The novelty of this study is also a considerable strength. While previous research has focused on incidental news exposure on different social media platforms, most of these studies were exploring the implications of incidental news exposure on political engagement (Barnidge, 2020; Fletcher & Nielsen, 2017; Yamamoto & Corey, 2019). Consequently, this current study expanded on the existing research by focusing on the platform Instagram and the potential negative impact of incidental news exposure on well-being, as well as the possible moderation of this relationship by self-efficacy.

However, there are some limitations. To begin with, the experiment consisted of a short one-time survey, which might have affected the size and significance of the results, as the exposure to the incidental news was very brief. The effects of the incidental news exposure on Instagram might be greater with a longer and repeated exposure (Jain, 2021). Additionally, the MHC-SF asks participants to rate their well-being during the past month, and the duration of the experiment was equivalent to merely a fragment of that timeframe.

Another limitation was that while the sample size was sufficiently large, it consisted of mostly female Germans. Therefore, it is questionable how generalizable the results of the study are to the general population, as there are cultural and potential gender differences in how people perceive and react to the topic of climate change (Wolf & Moser, 2011). In

addition, it is notable that Cronbach's alpha for the adapted self-efficacy subscale was merely acceptable, but not good or excellent. The adapted subscale was also not revalidated. This results in the possibility that the scale did not measure the construct of self-efficacy optimally (Tavakol & Dennick, 2011).

Moreover, the composition of the artificial feed consisted of lifestyle content by individuals, such as work, friends, and travel. Real Instagram feeds also include sponsored advertisements that are picked based on the user's interests (Fletcher & Nielsen, 2017; Cotter, 2018; Swart, 2021). These were not included in this current study's Instagram feed, which might decrease realism for most users. Other popular types of content were also underrepresented in this feed, including entertaining posts, brands, or influencer content (Huntington, 2013; Tafesse & Wood, 2021). Many users subscribe to such content, and this study's artificial feed might seem unrealistic or incomplete to them.

Implications and Future Research

The results of this current study demonstrated a significant decline in well-being for both groups after being exposed to the Instagram feed. The relationships between Instagram, jealousy, self-comparison, and reduced well-being have been confirmed by several studies, highlighting how Instagram use can have negative effects on users' well-being (Faelens et al., 2021). Due to Instagram's large number of users, this issue might affect millions of people worldwide (Insider Intelligence, 2022). Mindfulness training is an example of a successful type of intervention aimed at increasing well-being (Sakuraya et al., 2020), and it could be offered to Instagram users to counteract the detrimental effects of the platform use. A potential implementation could take the form of short descriptions of mindfulness exercises that are placed on a user's feed by the algorithm.

Multiple recommendations for future research can be made. If the topic of climate change is used in further research about incidental news exposure, researchers should be

sensitive to possible differences between populations and how they react to climate news. This recommendation is based on the findings of Wolf & Moser (2011), who indicate that research on people's perceptions on climate change should focus on subgroups of people as there are cultural, gender, and socioeconomic differences, which can lead to ambiguous results in very diverse samples (Wolf & Moser, 2011). As a result, researchers are recommended to focus on specific cultures, genders, or people from similar socioeconomic backgrounds, and the impact of incidental exposure to climate news on them.

To avoid issue fatigue, future research could incorporate news topics which are not reported as often as climate change. Davis et al. (2003), as well as Fernández-Fontelo et al. (2019) named domestic violence as a topic which is not reported in the news as frequently as others. Moreover, Maier (2019) noted that the violation of human rights is not reported sufficiently. Thus, the topics of domestic violence and human rights violations might be less susceptible to issue fatigue and could be used for further exploration of incidental negative news exposure and its effects.

While this study expanded on the research on incidental negative news exposure on Instagram, more research is needed. Due to the idealized nature of most Instagram content, researchers should be wary of the potential decrease in well-being caused by social comparison or jealousy (Faelens et al., 2021). The extent to which Instagram users are affected by these behaviors could be examined further by including specific questions about them.

Furthermore, researchers who expect many participants with an academic background should employ a more complex deceptive study aim. Adding a mediator or moderator to the supposed study design can increase realism and decrease doubt. If the researchers wish to ask the participants if they have guessed the real purpose of the study, participants should be given the option to type an answer, so that it is clear what exactly the participant had guessed.

If essential parts of the study design were guessed, then there might be implications for the validity of the results.

To improve the authenticity of the artificial Instagram feed, not only posts from individuals should be included, but also sponsored advertisements. Alternatively, other platforms can be explored, such as TikTok. Additionally, replicating the survey but increasing the duration of the incidental news exposure might lead to a stronger effect of incidental news exposure on well-being. Lastly, the current study used graphic news images, due to Instagram mainly being a photo- and video-sharing platform. It can be investigated if there is a difference in the effect of incidental negative news exposure on different social media platforms if more text-based news is used, rather than picture-based news.

Conclusion

This current study explored the effects of incidental negative news exposure on Instagram on well-being, and whether self-efficacy moderates this relationship. To conclude this paper's findings, it is unlikely that the incidental exposure to negative news influenced well-being. Moreover, self-efficacy was not found to be a moderator of the relationship between negative incidental news exposure and well-being. Possibly, the decline in the participants' well-being was influenced by self-comparison and jealousy caused by the idealized Instagram feed. Instagram app developers should consider embedding short mindfulness exercises into the feeds to counteract these effects. Issue fatigue might account for the lack of impact of the negative news exposure. Future research could explore whether subgroups based on gender, age, or culture are affected differently by the incidental exposure to climate change news. Clearer insights into the effects of incidental negative news exposure might be achieved by repeated exposure to underreported news with a more representative Instagram feed. As self-

efficacy had a significant positive effect on well-being, it might still be relevant in situations in which the exposure to negative news results in significant stress in the participants. In conclusion, an impact of incidental negative news exposure on well-being could not be confirmed in this current study, and self-efficacy had no significant influence on the relationship between these two variables.

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Appendices

Appendix A

Consent form as embedded into Qualtrics

Q1
Dear participants, The goal of this study is to identify the relation between social media and wellbeing.

The researchers are Bachelor Psychology students at the University of Twente in Enschede, Netherlands. This research aims as a graduation assignment.

The study will take approximately 15 minutes to complete. It includes questions concerning wellbeing as well as aspects of psychological capital. Psychological capital is a resource a person can make use of to cope with adverse situations.

Participating in this study is completely voluntarily. You can withdraw from it at any time, which will have no negative consequences for you. Your data will be treated anonymously and confidentially and is used for study purposes only. The data we use for our report cannot be tracked back to you. All data collected will be deleted once the study process is finished.

If you have questions concerning this study or are interested in gaining insights into the results, please feel free to contact us via E-Mail. Thank you for your participation!

Kind regards,

Julia Bauer

[names and email addresses of other researchers were removed due to privacy reasons]

I consent to my participation in this study

- Yes, I consent (1)
- No, I do not consent (2)

Appendix B

Demographic Questions as embedded into Qualtrics

Q4 What is your nationality?

- Dutch (1)
- German (2)
- Other, namely... (3)

_____

Q5 With what gender do you identify as?

- Male (1)

- Female (2)
- Non-binary / third gender (3)
- Prefer not to say (4)

Q6
What is your age?

_____

Appendix C

Mental Health Continuum Short Form and PSYCAP X SCALE as embedded into Qualtrics

Q2 First, we will ask you some questions regarding how you see life. Please try to answer as truthfully as possible.

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Somewhat Agree (4)	Agree (5)	Strongly Agree (6)
I feel confident analyzing a long-term problem to find a solution. (1)	•	•	•	•	•	•
I feel confident in representing my work or school in official meetings. (2)	•	•	•	•	•	•
I feel confident contributing to discussions. (3)	•	•	•	•	•	•
I feel confident to set targets / goals in life. (4)	•	•	•	•	•	•
I feel confident contacting people to discuss problems. (5)	•	•	•	•	•	•

I feel confident presenting information to a group of people. (6)	•	•	•	•	•	•
If I should find myself in a jam in life, I could think of many ways to get out of it. (7)	•	•	•	•	•	•
At the present time, I am energetically pursuing my life goals. (8)	•	•	•	•	•	•
There are lots of ways around any problem. (9)	•	•	•	•	•	•
Right now, I see myself as being pretty succesful in life. (10)	•	•	•	•	•	•
I can think of many ways to reach my current life goals. (11)	•	•	•	•	•	•
At this time, I am meeting the life goals that I have set for myself. (12)	•	•	•	•	•	•

When I have a setback in my life, I have trouble recovering from it, moving on. (13)	•	•	•	•	•	•
I usually manage difficulties one way or another. (14)	•	•	•	•	•	•
I can be "on my own", so to speak, if I have to. (15)	•	•	•	•	•	•
I usually take stressful things in life in stride. (16)	•	•	•	•	•	•
I can get through difficult times because I've experienced difficulty before. (17)	•	•	•	•	•	•
I feel I can handle many things at a time in life. (18)	•	•	•	•	•	•
When things are uncertain for me, I usually expect the best. (19)	•	•	•	•	•	•
If something	•	•	•	•	•	•

can go wrong for me in life, it will. (20)						
I always look on the bright side of things regarding life. (21)	•	•	•	•	•	•
I'm optimistic about what will happen to me in the future. (22)	•	•	•	•	•	•
Things never work out the way I want them to. (23)	•	•	•	•	•	•
I approach life as if "every cloud has a silver lining." (24)	•	•	•	•	•	•

Q3
The next couple of questions concern your well-being. Again, please try to answer as truthfully as possible.

During the past month, how often did you feel...

	Never (1)	Once a week (2)	About once a week (3)	About 2 or 3 times a week (4)	Almost every day (5)	Every day (6)
Happy (1)	•	•	•	•	•	•
Interested in life (2)	•	•	•	•	•	•
Satisfied with life (3)	•	•	•	•	•	•
That you had something important to contribute to society (4)	•	•	•	•	•	•
That you belonged to a community (like a social group, or your neighborhood) (5)	•	•	•	•	•	•
That our society is becoming a better place, for all people (6)	•	•	•	•	•	•
That people are basically good (7)	•	•	•	•	•	•
That the way our society works makes sense to you (8)	•	•	•	•	•	•
That you liked most parts of your personality (9)	•	•	•	•	•	•
Good at managing the responsibilities of your daily life (10)	•	•	•	•	•	•

That you had warm and trusting relationships with others (11)	•	•	•	•	•	•
That you had experiences that challenged you to grow and become a better person (12)	•	•	•	•	•	•
Confident to think or express your own ideas and opinions (13)	•	•	•	•	•	•
That your life has a sense of direction or meaning to it (14)	•	•	•	•	•	•

Q9 You will now see an Instagram feed. Spend some time to look at each of the posts, their captions and comments.

Appendix D

Instagram Feed (Control Condition)

kelly_langmore

17 vind-ik-leuks

kelly_langmore Kylie and Kendall watching me procrastinate... Guilty as charged 🤪🤲

2 dagen geleden · Vertaling weergeven

carlo_travel

juliaa_baauer en 50 anderen vinden dit leuk

carlo_travel ⛰🌿🧗

#hiking #waterfall #nature

1 dag geleden · Vertaling weergeven

itswyattsnell

kelly_langmore en **321 anderen** vinden dit leuk

itswyattsnell My sister Ruth got married last week! Thanks for having me as your wedding photographer. It was my honor.

lisi_sunni ruth and ben are the cutest together <3

itswyattsnell @lisi_sunni They really are.

kelly_langmore

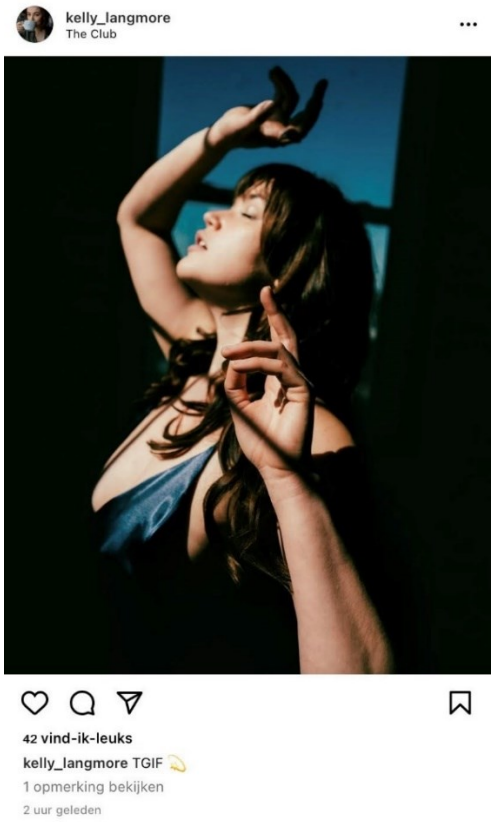
27 vind-ik-leuks

kelly_langmore Treated myself during my morning walk. #iscreamforicecream #delish 🍦

2 dagen geleden · **Vertaling weergeven**


lisi_sunni
Den Haag
kelly_langmore en anderen vinden dit leuk
lisi_sunni jullie zijn geweldig <3 weekendje in den haag
#lekkermetdemeidenmeidenmeiden
1 dag geleden


itswyattsnell
kelly_langmore en 254 anderen vinden dit leuk
itswyattsnell Office days.
lisi_sunni coffee first :D
itswyattsnell @lisi_sunni Haha! Damn right.
1 dag geleden · Vertaling weergeven


kelly_langmore
The Club
42 vind-ik-leuks
kelly_langmore TGIF
1 opmerking bekijken
2 uur geleden


lisi_sunni
Nijmegen
kelly_langmore en anderen vinden dit leuk
lisi_sunni spring vibes <3
itswyattsnell Nice photo composition.
1 dag geleden · Vertaling weergeven

Appendix E

Instagram Feed (Experimental Condition)

kelly_langmore

17 vind-ik-leuks

kelly_langmore Kylie and Kendall watching me procrastinate... Guilty as charged

2 dagen geleden · Vertaling weergeven

guardian

40.865 vind-ik-leuks

guardian As a verdict on the climate crimes of humanity, the new Intergovernmental Panel on Climate Change report could not be clearer: we're guilty as hell.

The repeatedly ignored warnings of scientists over past decades have now become reality. Humanity, through its actions, or lack of action, has unequivocally overheated the planet. Nowhere on Earth is escaping rising temperatures, worse floods, hotter wildfires or more searing droughts.

The future looks worse. "If we do not halt our emissions soon, our future climate could well become some kind of hell on Earth," says Prof Tim Palmer at the University of Oxford.

So what do we need to know about the IPCC's most damning report to date - and what needs to come next? Swipe to read more.

itswyattsnell

kelly_langmore en **321 anderen** vinden dit leuk

itswyattsnell My sister Ruth got married last week! Thanks for having me as your wedding photographer. It was my honor.

lisi_sunni ruth and ben are the cutest together <3

itswyattsnell @lisi_sunni They really are.

kelly_langmore

27 vind-ik-leuks

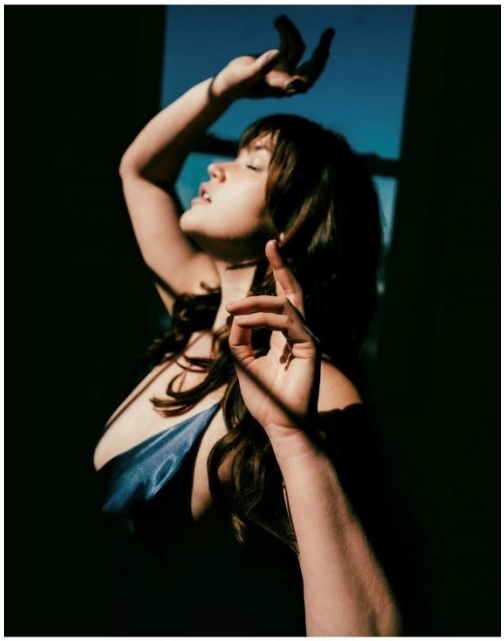
kelly_langmore Treated myself during my morning walk. #iscreamforicecream #delish 🍦

2 dagen geleden · **Vertaling weergeven**


lisi_sunni
Den Haag
kelly_langmore en anderen vinden dit leuk
lisi_sunni jullie zijn geweldig <3 weekendje in den haag
#lekkermetdemeidenmeidenmeiden
1 dag geleden


itswyattsnell
kelly_langmore en 254 anderen vinden dit leuk
itswyattsnell Office days.
lisi_sunni coffee first :D
itswyattsnell @lisi_sunni Haha! Damn right.
1 dag geleden · Vertaling weergeven

kelly_langmore
The Club



42 vind-ik-leuks
kelly_langmore TGIF 💫
1 opmerking bekijken
2 uur geleden

lisi_sunni
Nijmegen

kelly_langmore en **anderen** vinden dit leuk
lisi_sunni spring vibes <3
itswyattsnell Nice photo composition.
1 dag geleden · **Vertaling weergeven**

guardian

82.459 vind-ik-leuks

guardian The Earth is changing faster than at any point in human memory as a result of human-caused global heating.

From extreme heat and wildfires to devastating flooding as well as drought, our picture desk has collated a series of photos documenting how severe weather conditions have been affecting so many of us in the last six months.

Swipe through to see 10 of the most powerful images, and tap the link in bio to view Joe Plimmer's full 50 photograph selection.

Appendix F

Second display of Mental Health Continuum Short Form and First Control Question as embedded into Qualtrics

Q7
We would like you to fill out the questions about your well-being again.

During the past month, how often did you feel...

	Never (1)	Once a week (2)	About once a week (3)	About 2 or 3 times a week (4)	Almost every day (5)	Every day (6)
Happy (1)	•	•	•	•	•	•
Interested in life (2)	•	•	•	•	•	•
Satisfied with life (3)	•	•	•	•	•	•
That you had something important to contribute to society (4)	•	•	•	•	•	•
That you belonged to a community (like a social group, or your neighborhood) (5)	•	•	•	•	•	•
That our society is becoming a better place, for all people (6)	•	•	•	•	•	•
That people are basically good (7)	•	•	•	•	•	•
That the way our society works makes	•	•	•	•	•	•

sense to you (8)						
That you liked most parts of your personality (9)	•	•	•	•	•	•
Good at managing the responsibilities of your daily life (10)	•	•	•	•	•	•
That you had warm and trusting relationships with others (11)	•	•	•	•	•	•
That you had experiences that challenged you to grow and become a better person (12)	•	•	•	•	•	•
Confident to think or express your own ideas and opinions (13)	•	•	•	•	•	•
That your life has a sense of direction or meaning to it (14)	•	•	•	•	•	•

Q35
Can you say in your own words what kind of Instagram posts you just saw, regarding the type of content? (Food, fitness, etc.)
Feel free to use bullet points!

Appendix G

Debriefing Form and Second Control Question

Q8
Debriefing

Dear participants, In the beginning of this study, we indicated that we were interested in identifying the relationship between social media and well-being. However, that information was incomplete.

We were also investigating incidental negative news exposure, which is the process of being confronted with negative news without expecting it or wanting it. It has been connected to increased stress and other negative effects on mental health in research. This is why the experimental group of this research was also shown screenshots of news posts about climate change. If you were part of the control group, you only saw Instagram posts of fictional people.

Additionally, we asked you questions about how hopeful, resilient etc. you are. The aim behind this was to see whether someone with a lot of hope is less affected by incidental negative news exposure. We apologize for any distress the climate-change-related posts might have caused for you.

Again, we would like to offer you the opportunity to reach out to us if you would like to share something with us or ask a question. Here are our email addresses:

Julia Bauer

[names and email addresses of other researchers were removed due to privacy reasons]

Please indicate whether you still consent to being part of this study, knowing the complete information now.

- I confirm my consent. (1)
- I do not consent anymore. (This will terminate your participation) (2)

Q58
Information to those wo do not access this study through University of Twente's SONA-System: You will likely see an error screen after clicking further, but this is not a problem. Your data will be saved and all is fine. :)

Did you guess what this study was really about before seeing the debriefing? Please answer truthfully.

- Yes (1)
- No (2)

Appendix H

Modified version of the PCQ-24

1. I feel confident analyzing a long-term problem to find a solution.
2. I feel confident in representing my work or school area in official meetings
3. I feel confident contributing to discussions.
4. I feel confident helping to set targets/goals in life.
5. I feel confident contacting people to discuss problems.
6. I feel confident presenting information to a group of people.
7. If I should find myself in a jam in life, I could think of many ways to get out of it.
8. At the present time, I am energetically pursuing my life goals.
9. There are lots of ways around any problem.
10. Right now, I see myself as being pretty successful in life.
11. I can think of many ways to reach my current life goals.
12. At this time, I am meeting the life goals that I have set for myself.
13. When I have a setback in my life, I have trouble recovering from it, moving on.
14. I usually manage difficulties one way or another in life.
15. I can be “on my own,” so to speak, if I have to.
16. I usually take stressful things in life in stride.
17. I can get through difficult times because I’ve experienced difficulty before.
18. I feel I can handle many things at a time in life.
19. When things are uncertain for me, I usually expect the best.
20. If something can go wrong for me in life, it will.
21. I always look on the bright side of things regarding life.
22. I’m optimistic about what will happen to me in the future.
23. In life, things never work out the way I want them to.
24. I approach life as if “every cloud has a silver lining.”

Appendix I

P-P-plots of dependent variables and moderator variables

Figure I1

P-P Plot of Residuals of Pre-Well-Being

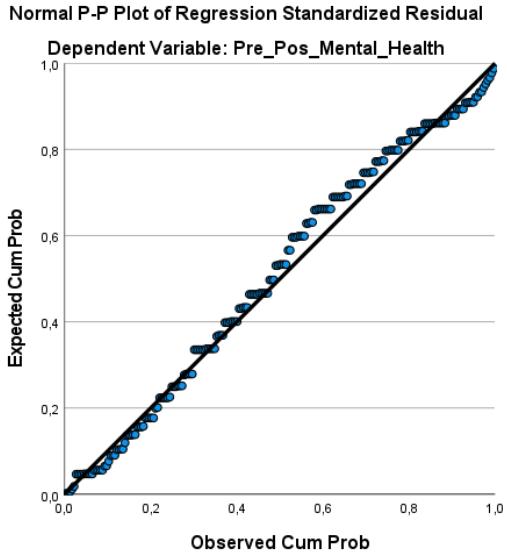


Figure I2

P-P Plot of Residuals of Post-Well-Being

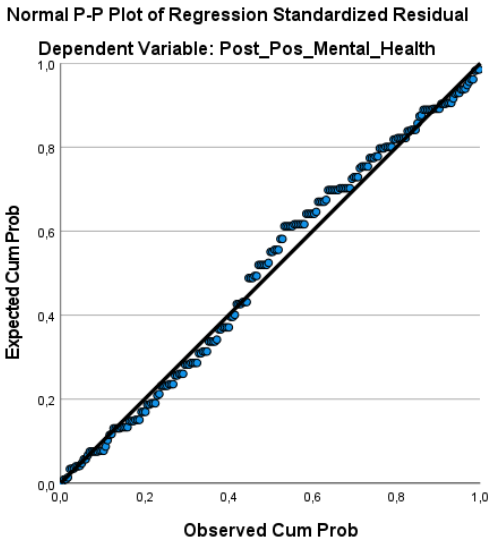
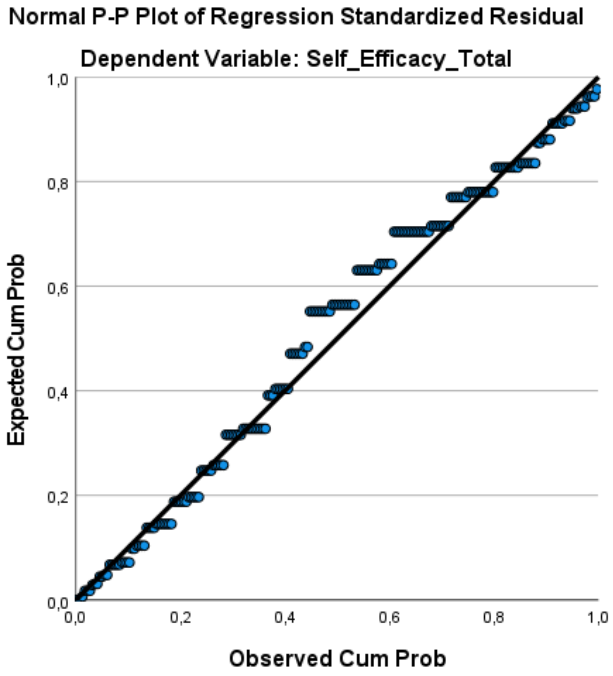


Figure I3

P-P Plot of Residuals of Self-Efficacy



Appendix K

Levene's Statistic based on Median per Variable

Variable	Levene Statistic (based on Median)
Self-efficacy	.554
Pre-well-being	.079
Post-well-being	.678