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Abstract

The conditions under which social media use impacts well-being and mental health are complex. The current 10-day longitudinal quasi-experiment (student sample, N = 111) applied an entertainment theory lens to explore the effects of active posting and engaging with hedonic or inspiring Facebook content (vs. passive browsing) on young people's eudaimonic well-being (levels of connectedness to humanity, love, compassion, presence of meaning) and mental health (anxiety and depressive symptoms). The results provide tentative evidence that finding and sharing inspiring content to a Facebook group increased love and compassion toward others over time. It also led to more compassion at the end of the study compared to participants who shared hedonic content. Although we did not find an increase in connectedness and meaningfulness over time for participants sharing content that they found inspiring, the latter also did not take away from those experiences, regardless of how they used it. Similarly, no decrease—but also no increase—in anxiety and depressive symptoms were found over time, regardless of condition. The study stresses the importance of better understanding the content young adults engage with on social media for their mental health and well-being.

Keywords: smartphones; Facebook; inspiration; well-being; mental health; active social media use

Editorial Record

Introduction

Social media use can have both positive and negative impacts on mental health and well-being. For instance, positive self-presentation on Facebook (presenting positive aspects of one's self) has been associated with *increased* self-esteem and perceived social support (i.e., well-being indicators), as well as *decreased* self-esteem and elevated social anxiety (i.e., mental health indicators; see Meier & Reinecke, 2020; Twomey & O'Reilly, 2017). Such seemingly inconsistent findings can be explained by the nature of how people use the platform (i.e., active

vs. passive) and consumed content (e.g., Beyens et al., 2020; Meier et al., 2020). The latter aspect has received scant research attention to date.

From an entertainment psychology perspective, content perceived as hedonic (funny, pleasurable) versus eudaimonic (inspiring, meaningful) can lead to different media experiences and effects (Vorderer & Reinecke, 2015). Hedonic media experiences are associated with pleasure and feeling aroused. Eudaimonic media experiences are associated with feeling moved, touched, and contemplative, with secondary effects on meaning-making and prosociality (Oliver et al., 2015). Moreover, content perceived as *inspiring*—a particular type of eudaimonic experience—is associated with increased levels of connectedness, compassion, and altruism (Oliver et al., 2018). To date, the effects of inspiring content have mainly been studied within the audiovisual context (i.e., film, television) but to a lesser extent on social media. Because social media platforms afford users opportunities to share and interact with the content they encounter, the effects of inspiring content engagement over time may be particularly beneficial (per social sharing of emotions framework, Bartsch, 2012; Peters et al., 2018, and self-effects theories, Valkenburg, 2017).

Thus, the current study applied an entertainment psychology lens to the context of Facebook, investigating the effect of inspiring content on mental health and well-being over 10-days. To that end, two primary factors were varied: platform use (active vs. passive) and content (eudaimonic vs. hedonic). Specifically, participants either searched for and shared inspiring or hedonic content to a Facebook group or browsed Facebook passively without specific content instructions for at least 5 minutes a day for 10 days. We measured psychological well-being indicators found to be impacted by eudaimonic/inspiring media use (i.e., connectedness to humanity, compassion, love, meaning in life), as well as common mental health conditions reported from social media use (i.e., anxiety, depressive symptoms) with specific interest lying on the inspiring content sharing condition in comparison to the other two groups.

Active Versus Passive Social Media Use

Whether the use of social media results in positive or negative mental health effects depends greatly on how the user interacts with the platform. Burke et al. (2010) differentiated between active (or directed communication) and passive consumption of information. Active use entails "liking," tagging, and commenting on profiles, as well as one-to-one or one-to-many communication (i.e., posting, sharing). In contrast, passive consumption involves browsing, surveilling, and scrolling through the posts without direct exchange. Passive social media use has been associated with a greater likelihood for adverse mental health effects (e.g., Burke et al., 2010; Clayton et al., 2013; Verduyn et al., 2017).

However, recent research challenges such a simplified distinction between passive and active social media use (e.g., Trifiro & Gerson, 2019), particularly regarding well-being effects. Several studies report positive effects of passive use including increased social connection, interpersonal attraction, inspiration, and emotional well-being (e.g., Burke et al., 2011; Orben & Dunbar, 2017; Pouwels et al., 2021). For example, when content—even when passively consumed—elicits positive emotions, it can be perceived as an emotionally gratifying experience (see Bartsch, 2012), benefitting well-being (i.e., inspiration, optimism), connection and need satisfaction (Meier et al., 2020; Utz, 2015). Further, Beyens et al. (2020) demonstrated that adolescents differ greatly in whether social media effects them positively or negatively, whereas many report neither positive nor negative effects of passive social media use for well-being.

Nevertheless, active use may lead to relatively more benefits because of the additional component of social sharing. In general, humans tend to share emotional experiences with others (i.e., social sharing of emotions; see Rimé, 2009). The social sharing of (positive) emotions, mainly facilitated by social media affordances (i.e., liking, commenting, sharing buttons), was beneficial to well-being in past research. Some of these effects include positive affect, self-efficacy, and social cohesion (e.g., Bazarova et al., 2015; Choi & Toma, 2014). For instance, when something positive happens, we often share the good news with others, which can improve our mood and make us feel closer to those with whom we share the information; this process is known as capitalization (e.g., Peters et al., 2018). Thus, active engagement with social media content may lead to gratifying experiences because positive emotions can be evoked from (a) exposure to the content itself, and (b) the social sharing of the emotional experience, leading to capitalization effects. Passive use effects, in contrast, are solely dependent upon the former.

Inspiring Social Media Content

The dual-process model of entertainment (e.g., Oliver & Raney, 2011; Vorderer & Reinecke, 2015) differentiates hedonic and eudaimonic experiences. Hedonic entertainment experiences are generally associated with mood and arousal regulation (i.e., feeling delighted, joy), whereas eudaimonic entertainment experiences tend to stimulate contemplation, meaning, and connectedness (Oliver et al., 2018). Some eudaimonic entertainment experiences elicit self-transcendent emotions—positive emotions that focus on others more so than the self (e.g., awe, elevation, gratitude, admiration, hope; see Dale et al., 2017; Stellar et al., 2017). These self-transcendent emotions are associated with greater connectedness to humanity, compassion toward others (Janicke & Oliver, 2017; Oliver et al., 2015), and prosocial motivations (Bartsch et al., 2018; Clayton et al., 2021; Krämer et al., 2017). Audiences routinely refer to entertainment that triggers self-transcendent emotions as *inspiring*.

The actual content that people find inspiring can be idiosyncratic in nature. Nevertheless, more than half (53%) of American adults and more than two-thirds (67.3%) under the age of 30 report having been inspired by social media, with those numbers increasing (62.7% and 79.5% respectively) when online videos, like those often posted on social media sites, are included (Raney et al., 2018). In the current study, we adopted an audience-centered approach (see Klimmt, 2011), with inspiring content operationalized as Facebook posts that participants themselves found moving and touching.

Most research explores media-triggered self-transcendent emotions as short-term processes based on passive exposure (e.g., Dale et al., 2017; Janicke & Oliver, 2017). Social media platforms are sought out repeatedly throughout one's day, often for short intervals of time. They further offer opportunities for active engagement. Thus, the current study investigated repeated, active use of inspiring (versus hedonic) content, exploring the possibility that short doses of inspiration may cumulatively contribute to eudaimonic well-being over time. In fact, previous survey research has shown that encountering "small doses" of inspiring memes on social media regularly can lead to self-reported increases in meaning, optimism, and altruistic intentions (Rieger & Klimmt, 2019).

Moreover, the sharing of content perceived as inspiring may, over time, build eudaimonic well-being effects, based on the coalescence of reception and self-effects (Valkenburg, 2017). According to self-concept change theories (Valkenburg, 2017), the public expression of oneself, including sharing content, can reflect individuals' thoughts about themselves, beliefs, and attitudes. Specifically, sharing content one finds inspiring can promote self-reflecting on the value of things one finds inspiring, such as connectedness to humanity, compassion, or meaning. This internalization of the public self-presentation (via sharing of the content) may strengthen those beliefs and attitudes of oneself over time. As a result (and in light of social sharing of emotion effects), eudaimonic well-being benefits might be expected from actively sharing inspiring content. In the current study, we operationalized those potential benefits in terms of two dimensions of Ryff's (1989) concept of psychological well-being: positive relations with others and purpose in life.

Positive Relations With Others

Past research has shown that being inspired by social media can predict various well-being outcomes (e.g., Janicke et al., 2018; Meier et al., 2020). Though, the most consistent findings pertain to positive relations with others, including social capital, social connection, and social support (Domahidi, 2018; Meier & Reinecke, 2020). However, little is known about how different content may contribute to perceived positive relations with others or motivate applying those positive relations in differing social contexts. For instance, sharing a friend's tribute about a recently deceased loved one may reinforce self-beliefs about being a compassionate and loving person, and promote more general feelings of interconnectedness with humanity as a whole. Previous research has shown that inspiring television and film content can lead to increased feelings of connectedness to humanity, love, and compassion (Bartsch et al., 2018; Janicke & Oliver, 2017); therefore, it seems reasonable the same may be the case with Facebook content. Moreover, because of possible capitalization (i.e., great feelings of connection after sharing positive events with others) and self-effects, actively engaging with inspiring Facebook content should, over time, further promote positive social relations with others. Thus, we predicted:

H1: Participants who shared inspiring content on Facebook will report an increase in positive relations with others over time as evidenced by (a) connectedness with humanity, (b) love for others, and (c) compassion toward others.

Purpose in Life

One of the unique indicators of eudaimonic entertainment responses is the experience of meaning and purpose it provides to the audience (i.e., Oliver & Bartsch, 2011; Oliver et al., 2012; Steger et al., 2006). Explorations of meaning in life in the context of social media, however, are scarce. Yet, research on eudaimonic entertainment, in general, provides a sufficient background for predictions. Finding and searching for meaning and purpose in life is a common response to engagement with content perceived as inspiring. For example, remembering an inspiring meme on social media or feeling inspired by a beautiful nature post on Instagram has been associated with experiences of meaningfulness (Meier et al., 2020; Rieger & Klimmt, 2019). These effects might be even more potent for those who actively engage with inspiring posts (per the capitalization effect). Moreover, per self-effect theories, the more one shares something they find meaningful, the more they may believe that their life has purpose and meaning. Therefore, we predicted:

H2: Participants who shared inspiring content on Facebook will report an increase in meaning in life over time.

Inspiring Versus Hedonic Content Effects

Because of the potential benefits of social sharing in general noted above, one could argue that any observed effects on positive relations with others or meaning in life in the current study might be attributable to the sharing behavior itself rather than to the sharing of inspiring content specifically. To address this possibility, in the present study, some participants shared inspiring content, whereas others shared hedonic content (per dual-process models of entertainment). As previously noted, the primary purpose of hedonic content is enjoyment or pleasure (Oliver & Raney, 2011); its use is generally less related to eudaimonic well-being outcomes than the use of eudaimonic content. For example, with the social media context, Rieger and Klimmt (2019) found that exposure to a hedonic meme led to less meaningful affect and contemplation than exposure to a eudaimonic one; other studies report similar findings (e.g., Janicke & Oliver, 2017; Krämer et al., 2017; Oliver et al., 2012). We acknowledge these effects have mostly been observed following passive use of televisual or filmic media. Nevertheless, we predicted, based on capitalization effects research on social media and empirical findings on eudaimonic media content and meaningful affect:

H3: Participants who shared inspiring content on Facebook will report greater (a) connectedness with humanity, (b) love for others, (c) compassion toward others, and (d) meaning in life than participants who shared hedonic content on Facebook.

Inspiring Content Sharing Effects Versus Passive Use

The effects of passive browsing on well-being effects depend on what content users are exposed to in their feed and the type of social comparison they engage in (Meier et al., 2020). Passively encountered content, triggering negative emotions or contrasting social comparisons, can negatively affect well-being (Park & Baek, 2018), hindering connectedness to humanity or love responses. Yet again, even simple exposure to inspiring content can lead to positive social resources and meaning, as outlined above (Bartsch et al., 2018; Janicke et al., 2018). Moreover, searching for and sharing inspiring content should lead to beneficial effects on social resources and meaning in life due to the content exposure itself (Janicke et al., 2018; Rieger & Klimmt, 2019) and the capitalization resulting from the sharing behavior (Bartsch, 2012; Peters et al., 2018). Thus, we predicted:

H4: Participants who shared inspiring content on Facebook will report greater (a) connectedness with humanity, (b) love for others, (c) compassion toward others, and (d) meaning in life than participants who browsed Facebook passively.

Usage Activities, Content Effects, and Mental Health

Past research paid a great deal of scholarly attention to the issue of social media use and mental health. Overall, meta-analyses show a small, positive association between social networking site use and both depressive and anxiety symptoms (e.g., Meier & Reinecke, 2020). However, the directionality of this relationship is not yet clear, meaning anxiety and depressive symptoms may result from, or they may result in, the use of social media. Concerning the former interpretation, increased symptoms often result from detrimental social comparison

processes (Meier & Reinecke, 2020), cyberbullying, and compulsive or addictive forms of use (i.e., problematic use; Vahedi & Zannella, 2021). However, how the content, which viewers engage in on social media, relates to anxiety and depressive symptoms has not been extensively investigated.

Concerning active versus passive use, research indicates that active use of Facebook is associated with a decrease in anxiety and depressive moods over time (e.g., Escobar-Viera et al., 2018; Thorisdottir, 2019). However, most of this research has emphasized active communication rather than active engagement with different types of content. We argue that sharing Facebook content perceived as hedonic or inspiring could, over time, decrease a user's anxious or depressive thoughts and feelings. Both types of content have a positive valence and elicit emotional states that contrast anxious or depressive moods, especially when they are shared (Choi & Toma, 2014; Peters et al., 2018). According to the broaden-and-build theory (Fredrickson, 2001), the general experience of positive emotions is positively associated with mental and physical health when such emotions are experienced repeatedly (e.g., Fredrickson et al., 2008). According to the theory, experiencing positive emotions can also help undo and cope with negative emotions, such as anxiety and depressive moods (Garland et al., 2010). Further, per the capitalization effect, the repeated sharing of positive emotional experiences with others—whether associated with inspiring or hedonic content—should improve mental health and well-being over time. Thus, we predicted:

H5: Participants who shared inspiring or hedonic content on Facebook will experience a decrease in (a) anxiety and (b) depressive symptoms over time.

Concerning the impact of passive Facebook consumption, the outcomes are more uncertain but are likely content-dependent. For instance, Kramer and colleagues (2014) demonstrated that emotions expressed on Facebook influence other users' emotions, indicating an emotional contagion effect. Further studies revealed a relationship between passive use and increases in depressive symptoms and anxiety, caused explicitly via contrasting social comparisons or fear of missing out (e.g., Burnell et al., 2019; Escobar-Viera et al., 2018; Thorisdottir et al., 2019; Tosun & Kaşdarma, 2019). However, assimilative comparisons from passive Facebook use can reduce the likelihood of depressive symptoms (Tosun & Kasdarma, 2019). Similarly, passive use can also lead to increased feelings of connection with others (Burke et al., 2011; Utz, 2015) by creating a sense of ambient awareness of social others (Levordashka & Utz, 2016). In fact, research suggests that people can feel connected to a stranger online by simply browsing through the person's posts (e.g., Burke et al., 2011; Utz, 2015); social connection is a resilience factor for several mental health conditions (Pflum et al., 2015). Thus, the existing scholarship on passive use and depressive and anxiety symptoms is equivocal. Consequently, we explored a research question:

RQ1: For participants who browsed Facebook passively, what differences, if any, will be observed over time in (a) anxiety and (b) depressive symptoms?

Methods

Sample

We recruited undergraduate students at research universities in the southwestern (Site 1) and southeastern (Site 2) regions of the United States to participate in the study in exchange for a $20 stipend or course/extra credit. A total of 210 participants over the age of 18 completed the pre-study questionnaire. Those who completed the study in its entirety had an average age of $M = 19.40$ ($SD = 1.50$, Range = 18–30); the majority were female (82.0%; 17.1% male, 0.9% non-binary/third gender) and non-Hispanic White (72.2%; 15.3% Hispanic/Latino, 18.9% Asian, 1.8% African American, 0.9% each Hawaiian/Pacific Islander, American Indian/Alaska Native, or Other). Of the final sample ($N = 111$), 38 were randomly assigned to the active use, inspiring content condition ($n_{Site\ 1} = 10$; $n_{Site\ 2} = 28$), 50 to the active use, hedonic content condition ($n_{Site\ 1} = 12$; $n_{Site\ 2} = 38$), and 23 to the passive use condition (Site 1).

Procedure

We conducted a longitudinal experiment (2 weeks total, with 10 specified days of data collection) at the two research sites in two semesters (between 2016–2017). Qualified participants were 18 years or older who used Facebook at least twice per week and expressed a willingness to allow the research team access to their timeline posts for the duration of the study (active-use groups only). We chose Facebook as the social media platform as it allowed the researchers to control participants' posting behavior by utilizing the Facebook Groups function. We

obtained informed consent, and the participating universities' IRBs approved the study (Site 1: IRB#1617H025; Site 2: IRB#201619163).

A total of 210 participants completed a pre-study questionnaire one week before to the experiment, which included the consent form, demographics, and all independent variables[1]. The pre-questionnaire also instructed the participants to befriend a designated researcher on Facebook and join the study's corresponding Facebook group page (one page per condition). Throughout the study, we instructed participants to share content they perceived as either inspiring (inspiring content condition) or funny (hedonic content condition) to the study's corresponding Facebook group page for at least 5 minutes each day. We further asked them to tag the researcher in each post, which allowed us to track each participant's sharing unobtrusively and ensure they shared condition-appropriate content. Participants were able to see the other participants' posts within the respective group page[2].

Data for the passive use condition were collected at Site 1 (only) approximately 12 months after the two active conditions in 2018[3]. Passive use in the current study was defined as using Facebook without a clear intention or goal in mind (Scherr et al., 2019; Verduyn et al., 2017). We asked participants to simply browse through their news feed for at least 5 minutes each day (average browsing time M = 13.46 minutes, SD = 7.77). Participants were not required to join a Facebook Group or to tag the researcher when browsing. Browsing was not significantly related to any of the outcome variables ($p > .05$).

Regardless of condition, all participants received a 5-minute check-in survey every weekday (Monday–Friday, sent at 5:00 p.m., accessible until midnight) that assessed measures of connectedness, meaning, anxiety, and depression, and whether they posted something on or browsed through Facebook that day. After completing the final check-in survey on the Friday night of week 2, participants were given the option to complete the final post-study survey immediately or within the next five days. The posttest included all dependent variables, followed by instructions to pick up the $20 compensation or to receive course or extra credit.

Measures

All measures were assessed on 7-point Likert-type scales ranging from 1 = *strongly disagree/not at all* to 7 = *strongly agree/very much* unless otherwise noted. To avoid survey fatigue, some daily check-in measures were only assessed every other day. Thirteen attention check-items were included in the pre- and posttests (only).

Connectedness to Humanity (Daily)

Perceived interconnectedness with humanity was assessed through 10 daily check-in surveys using four items from the perceived shared human goodness scale (Oliver et al., 2015). Items measured how the participant felt at the present moment. The items were: *Today I felt that there is a certain beauty in everyone; … that on a higher level, all of us share a common bond; … that all life is interconnected;* and *… that at one level of thinking, all humans are the same*. Cronbach's α ranged between .734 and .945 for all 10 time points.

Love Toward Others (Pre-Post)

The positive emotional experience of love was measured with four items from the love subscale of the dispositional positive emotion scale (DPES; Shiota et al., 2006). Two items related to how other people respond to the respondent were omitted to keep the focus on the participants' feelings of love toward others. It was measured in both the pretest (α = .795) and posttest (α = .767). A sample item is *I find it easy to trust others*.

Compassion (Pre-Post)

State dispositional compassion was measured with the 5-item compassion subscale from the DPES (Shiota et al., 2006) at both pre- (α = .847) and post-treatment (α = .848). Example items include *I often notice people who need help* and *I am a very compassionate person*.

Meaning in Life (Selected Days)

Meaning in life was assessed every other day during the 10 weekdays for a total of five times with a single item adopted from the meaning in life questionnaire (Steger et al., 2006): *Today I felt a sense of meaning in my life*.

Anxiety (Selected Days)

The experience of anxiety was measured every other day during the 10 weekdays (five times total) with a single item from the Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995): *I feel scared without any good reason* on that day.

Depressive Symptom (Selected Days)

The experience of depressive symptoms was also measured every other day during the 10 weekdays for a total of five times with a single item from the DASS (Lovibond & Lovibond, 1995): *I found it difficult to work up the initiative to do things* on that day.

Analysis Plan

Daily Check-In Surveys

For items repeated across the 10-days of data collection—connectedness to humanity, meaning in life, anxiety, and depression—multilevel modeling analyses (MLM) using R-software version 4.0.3. were conducted. Each measurement occasion of each variable (Level 1) was nested within individuals (Level 2) and assessed over time. We standardized (but did not center) all dependent variables. To address missing data across all time points, we omitted participants who reported no values for each dependent variable on the daily check-in surveys (missing cases: connectedness = 49, meaning in life = 50, anxiety = 51, depressive symptoms = 51). When participants had some missing data, we imputed these values using the mean across all available values for the respective dependent variable. We included the inspiring and hedonic conditions as a dummy-coded, binary variable in the model; the passive condition was coded as 0. Additionally, we included an interaction term for each condition dummy variable with the time variable. Gender was entered as a covariate, as previous research has reported gender differences in social media use and well-being (e.g., Raney et al., 2018). Sample size varied for each daily check-in, with an average of n = 146 participants completing the daily check-ins. Furthermore, location was entered as a control variable for the analysis on meaning to account for the differences between locations (see Preliminary Analysis).

Pre- and Posttest Variables

Repeated-measures analyses of variance (ANOVA) were conducted for love for others and compassion. For all post-test-only, between-group comparisons, we conducted ANCOVAs, controlling for gender (see Raney et al., 2018; Tifferet, 2020) and pretest or Day One scores (depending on the first measurement). A total of 59 participants failed to complete both the pre- and posttest, or could not be matched (attrition rate 28.1%), leaving n = 151 in the sample. Of those completing the pre- and posttest questionnaires, 40 participants failed the attention-check items, leaving 111 participants in the sample for the pre-post-test analyses. A conservative approach was applied to removing participants, with data for those missing one attention check by at least 2 units of measure being removed from the analysis. For example, if the attention-check item required *strongly agree* (7) to be indicated, then data for participants responding with 6 or 7 were retained, whereas those responding with 5 or below were regarded as having failed the attention check and were omitted. Results reported herein are based on the cleaned dataset (n = 111), but for transparency purposes results with the fully matched dataset (n = 151) without the attention-check deleted cases have been reported as well. The excluded sample (n = 40) differed from the retained sample in terms of age (the cleaned data was one year younger on average), gender (proportionally more females than males in the cleaned sample) and in the pre-test love toward other's scores (higher values for the cleaned data). Table 1 reports the number of participants for the pretest, posttest, and daily check-in measures with and without the participants who failed the attention checks (or who could not be matched), per condition.

Effect Size Report

Due to the varying sample sizes between conditions, and the relative smaller sample altogether (which can impact p-values), we followed Bowman's (2017) recommendation and interpret the data based on effect-size results. Based on previous studies examining active versus passive social media use and its impact on mental health, we regarded an effect size of partial η^2 = .05 as a small and partial η^2 = .20 as a medium effect (e.g., Meier & Reinecke, 2020; Vahedi & Zanella, 2021). Thus, even though an effect might be insignificant due to the small sample, if the magnitude of the effect is within the pre-determined range (η^2 = .05–.20), then we contend that the results can be interpreted as meaningful. We encourage the reader to keep this approach in mind when interpreting the results.

Table 1. *Number of Participants per Condition who Completed the Pretest, Daily Check-in Measures, and Posttest, Including (a) Those who Failed the Pretest-Posttest Attention Checks or Whose Pre-Posttest Scores Could not be Matched, and (b) Those Who Passed the Attention Checks and Whose Pre-Posttest Data Could Be Matched, as Well as the Specific Measures Used in Each Assessment.*

Condition	Pretest	Check-in 1	Check-in 2	Check-in 3	Check-in 4	Check-in 5	Check-in 6	Check-in 7	Check-in 8	Check-in 9	Check-in 10	Posttest
Inspiring	84/38	51/35	53/34	56/37	56/36	56/36	56/36	56/37	54/36	53/36	56/37	57/38
Hedonic	80/50	56/47	55/46	57/48	54/46	54/47	54/48	54/46	58/50	56/48	53/46	58/50
Passive	39/23	38/22	34/21	36/22	34/23	37/22	35/21	39/23	36/21	38/22	36/23	39/23
Measures	1	2	3	2	3	2	3	2	3	2	3	1

Note. Sample sizes reflect (a)/(b); also, *n* is based on Compassion (pre-and posttest) and Connectedness (daily check-in) scores. Measures legend: 1 = *Compassion; Love toward Others*; 2 = *Connectedness, Meaning in Life*; 3 = *Connectedness, Anxiety, Depression*.

Open Science Information

Following open science best practices, we share supplemental materials for this project. Find condition instructions, participant retainment, condition manipulation check, and graphical representation for the MLM results on our Open Science Foundation (OSF) website: https://osf.io/dnmjc/?view_only=5ad07a52a168431ba4bc90ee0561e6fd

Results

Preliminary Analyses

The supplemental materials outline how participants in all conditions adhered to the instructions and either shared on the majority of days (active use conditions) or only browsed Facebook for most of the time (passive use condition). No differences between the two sites were observed on the outcome variables, except for the meaning in life (see also Table 3). Thus, except for meaning in life, the two location samples were collapsed for the analysis. Furthermore, the inspiring, hedonic, and passive conditions did not differ on the pretest variables or demographics; thus, we considered the random-assignment-to-condition procedure successful (see OSF for supplemental materials).

Hypotheses Testing

We predicted a change over time within the inspiring condition for the outcome variables connectedness (H1a), love for others (H1b), compassion (H1c), and meaning in life (H2). The multilevel model revealed no significant change over time for connectedness in the inspiring condition, leaving H1a unsupported (see Table 2).

For love for others, the repeated measures ANOVA revealed a nonsignificant but meaningful multivariate interaction as per a small effect size, $F(2, 108) = 2.58$, $p = .081$, partial $\eta^2 = .046$. Simple effects analysis revealed a significant increase in love toward others, $F(1, 108) = 5.68$, $p = .019$, partial $\eta^2 = .050$, between the pre- ($M = 4.47$, $SE = 0.206$) and posttest ($M = 4.77$, $SE = 0.200$) for the inspiring condition, but not for the other conditions, tentatively supporting H1b.

For compassion, a repeated measures ANOVA revealed a meaningful (albeit nonsignificant) small effect interaction, $F_{(2, 108)} = 2.82$, $p = .064$, partial $\eta^2 = .050$. Simple effects analyses revealed a significant and meaningful increase from the pre- ($M = 5.56$, $SE = 0.160$) to the posttest ($M = 5.90$, $SE = 0.151$) in compassion for the inspiring condition, $F_{(1, 108)} = 8.27$, $p = .005$, partial $\eta^2 = .070$, but not the other conditions. Thus, H1c was also tentatively supported.

For meaning in life, the interaction effect was neither significant nor meaningful (per the effect size), leaving H2 unsupported (see Table 3). Hypothesis 3 predicted greater connectedness (H3a), love (H3b), compassion (H3c), and meaning in life (H3d) at the end of the study for participants in the inspiring (vs. the hedonic) conditions. H4 made the same predictions for the inspiring condition compared to the passive condition. Table 4 summarizes the statistical results. No significant or meaningful differences (per the effect sizes) were found between the inspiring and hedonic conditions for posttest connectedness, love, or meaning in life, leaving H3a, H3b, and H3d unsupported.

Table 2. *MLM Results With Perceived Connectedness as Outcome Variable.*

Predictors	Baseline Model				Over-Time Model				Full Model			
		95% CI				95% CI				95% CI		
	b	LB	UB	p	b	LB	UB	p	b	LB	UB	p
Fixed Effects												
(Intercept)	−0.004	−0.14	0.13	.950	−0.05	−0.17	0.08	.461	−0.21	−0.57	0.16	.265
Time					0.01	−0.01	0.02	.266	0.003	−0.03	0.03	.854
Inspirational									−0.16	−0.47	0.16	.326
Hedonic									0.03	−0.28	0.34	.850
Female									0.26	−0.04	0.57	.089
Time * Inspirational									−0.01	−0.05	0.02	.493
Time * Hedonic									0.02	−0.01	0.06	.175
Random Effects												
Residual variance	.28				.25				.24			
Random intercept variance	.72				.46				.49			
Random slope variance					< .001				< .001			
Random slope-intercept correlation					.32				.35			
Intraclass-correlation coefficient	.72				.76				.77			
N	154				154				154			
Observations	1,550				1,550				1,550			
Marginal R^2	< .001				< .001				.038			
Conditional R^2	.720				.755				.781			

Note. Initial $n = 203$. We excluded participants with missing values across all time points from analysis, for the other participants we imputed data using the mean across all available time points. Time coded as continuous measure with range 1–10. Inspirational and hedonic condition included as dummy variables with inspirational/hedonic coded as 1 respectively, passive always coded as 0. Female participants coded as 1, others as 0. Results based on restricted maximum likelihood estimation. Observations were nested within participants, allowing for intercept to vary. The slope for time was allowed to vary.

Table 3. *MLM Results With Meaning in Life as Outcome Variable.*

	Baseline Model				Over-Time Model				Full Model			
		95% CI				95% CI				95% CI		
Predictors	*b*	LB	UB	*p*	*b*	LB	UB	*p*	*b*	LB	UB	*p*
Fixed Effects												
(Intercept)	−0.003	−0.13	0.12	.961	0.66	0.10	1.21	.020	−0.24	−0.66	0.18	.258
Time					−0.01	−0.09	0.06	.726	−0.01	−0.09	0.06	.735
Browsing time (min)					−0.05	−0.09	−0.02	.006				
Inspirational									−0.11	−0.53	0.31	.597
Hedonic									−0.03	−0.45	0.38	.882
Female									0.31	0.00	0.62	.049
Location A									−0.28	−0.58	0.02	.067
Time * Inspirational									0.08	−0.02	0.17	.132
Time * Hedonic									0.06	−0.03	0.16	.201
Random Effects												
Residual variance	.52				.35				.50			
Random intercept variance	.49				.58				.42			
Random slope variance					.02				.01			
Random slope-intercept correlation					−.37				.03			
Intraclass-correlation coefficient	.48				.61				.49			
N	153				36				153			
Observations	770				180				770			
Marginal R^2	< .001				.119				.041			
Conditional R^2	0.485				.658				.515			

Note. Initial *n* = 203. We excluded participants with missing values across all time points from analysis, for the other participants we imputed data using the mean across all available time points. Time coded as continuous measure with range 1–5. Inspirational and hedonic condition included as dummy variables with inspirational/hedonic coded as 1 respectively, passive always coded as 0. Female participants coded as 1, others as 0. Location A coded as 1, Location B coded 0. Results based on restricted maximum likelihood estimation. Observations were nested within participants, allowing for intercept to vary. The slope for time was allowed to vary.
[a] To explore the potential confounding effect of browsing time, we included browsing time in minutes as a control variable on the individual-level in the time model. However, we only had 36 participants reporting browsing time, all of which were in the passive condition. Thus, because we ended up with a rank deficient fixed-effects model matrix in the full model we had to exclude browsing time as a control variable.

Table 4. *ANCOVA Results for Eudaimonic Well-Being Posttest Scores Controlling for Gender and Day 1 or Pretest Scores.*

	Inspiring (*n* = 38) M_{adj} (*SE*)	Hedonic (*n* = 50) M_{adj} (*SE*)	Passive (*n* = 23) M_{adj} (*SE*)	*F*	*p*	partial η^2
Connectedness with humanity	4.25 (0.288)	4.12 (0.253)	4.15 (0.355)	0.06	.942	.001
Love toward others	4.88 (0.119)	4.69 (0.102)	4.52 (0.154)	1.79	.171	.033
Compassion	5.98 (0.108)[a]	5.62 (0.092)[b]	5.86 (0.138)[ab]	3.46	.035	.062
Meaning in life	4.69 (0.270)	4.35 (0.232)	4.01 (0.340)	1.29	.278	.027

Note. df varies based on different sample sizes for daily measures versus post-test only assessment. Different superscripts within rows indicate significant differences between conditions at *p* < .05 for all significant models.

However, participants in the inspiring condition experienced significantly more compassion (*M* = 5.98, *SE* = 0.108) at the end of the study than participants in the hedonic condition (*M* = 5.62, *SE* = 0.092), supporting H3c. We observed no significant differences between the inspiring and passive conditions on any outcome variable, leaving H4 unsupported. However, due to the low power within the conditions, we note that connectedness with humanity, love toward others, and meaning in life were descriptively higher for participants in the inspiring compared to the hedonic and passive condition.

Lastly, we predicted decreased levels of anxiety and depressive symptoms for the hedonic and inspiring condition over time (H5) and inquired about the same changes in the passive condition (RQ1). The analyses revealed no change over time in either condition for anxiety or depressive symptoms, leaving H5 unsupported (see Tables 5 and 6).

Table 5. *MLM Results With Anxiety as Outcome Variable.*

| | Baseline Model | | | | Over-Time Model | | | | Full Model | | | |
| | | 95% CI | | | | 95% CI | | | | 95% CI | | |
Predictors	*b*	LB	UB	*p*	*b*	LB	UB	*p*	*b*	LB	UB	*p*
Fixed Effects												
(Intercept)	< 0.001	−0.12	0.12	.989	0.06	−0.11	0.23	.492	0.34	−0.55	1.23	.457
Time					−0.02	−0.06	0.02	.355	−0.04	−0.12	0.05	.403
Inspirational									−0.15	−0.61	0.30	.505
Hedonic									−0.08	−0.53	0.37	.719
Female									0.04	−0.26	0.35	.788
Time * Inspirational									0.03	−0.07	0.14	.532
Time * Hedonic									0.01	−0.10	0.12	.858
Random Effects												
Residual variance	.58				.55				.55			
Random intercept variance	.43				.50				.52			
Random slope variance					.01				.01			
Random slope-intercept correlation					−.38				−.39			
Intraclass-correlation coefficient	.42				.45				.46			
N	152				152				152			
Observations	765				765				765			
Marginal *R²*	< .001				.001				.004			
Conditional *R²*	.425				.453				.464			

Note. Initial *n* = 203. We excluded participants with missing values across all time points from analysis, for the other participants we imputed data using the mean across all available time points. Time coded as continuous measure with range 1–5. Inspirational and hedonic condition included as dummy variables with inspirational/hedonic coded as 1 respectively, passive always coded as 0. Female participants coded as 1, others as 0. Results based on restricted maximum likelihood estimation. Observations were nested within participants, allowing for intercept to vary. The slope for time was allowed to vary.

Table 6. *MLM Results With Depressive Symptoms as Outcome Variable.*

Predictors	Baseline Model				Over-Time Model				Full Model			
		95% CI				95% CI				95% CI		
	b	LB	UB	*p*	*b*	LB	UB	*p*	*b*	LB	UB	*p*
Fixed Effects												
(Intercept)	−0.002	−0.10	0.10	.969	0.07	−0.12	0.25	.467	−0.08	−0.51	0.36	.735
Time					−0.02	−0.07	0.03	.350	0.00	−0.10	0.10	.988
Inspirational									0.19	−0.29	0.67	.433
Hedonic									0.02	−0.46	0.50	.921
Female									0.08	−0.17	0.32	.544
Time * Inspirational									−0.06	−0.19	0.07	.334
Time * Hedonic									< 0.001	−0.13	0.13	.996
Random Effects												
Residual variance	.76				.70				.70			
Random intercept variance	.24				.55				.56			
Random slope variance					.02				.02			
Random slope-intercept correlation					−.74				−.75			
Intraclass-correlation coefficient	.24				.30				.30			
N	152				152				152			
Observations	765				765				765			
Marginal R^2	< .001				.001				.004			
Conditional R^2	.239				.299				.307			

Note. Initial *n* = 203. We excluded participants with missing values across all time points from analysis, for the other participants we imputed data using the mean across all available time points. Time coded as continuous measure with range 1–5. Inspirational and hedonic condition included as dummy variables with inspirational/hedonic coded as 1 respectively, passive always coded as 0. Female participants coded as 1, others as 0. Results based on restricted maximum likelihood estimation. Observations were nested within participants allowing for intercept to vary. The slope for time was allowed to vary.

Supplemental Analysis

For transparency, the data for the pre- and posttests were reanalyzed with the larger, uncleaned sample (see OSF for detailed results). In contrast to H1b and H1c with the cleaned sample, a repeated measures ANOVA with the uncleaned sample revealed no significant (*p* < .05) or meaningful main or interaction effect for compassion or love toward others.

When analyzing H3 and H4 with the larger, uncleaned dataset, no significant differences were observed for any of the variables across groups, mirroring the analyses of the cleaned dataset, save for H3c (compassion was significantly higher in the inspiring condition than in the hedonic condition in the cleaned dataset).

Discussion

The current 10-day longitudinal quasi-experiment applied an entertainment theory lens to the context of Facebook, exploring the effects of sharing inspiring content on eudaimonic well-being (levels of connectedness to humanity, love, compassion, presence of meaning) and mental health symptoms (anxiety, depression). Based on the social sharing of emotions framework (Bartsch, 2012; Peters et al., 2018) and self-effects over time (Valkenburg, 2017), we predicted enhanced eudaimonic well-being and improved mental health for participants who shared content they perceived as inspiring over time. The study is a first attempt to close the gap in the literature on

analyzing the unique interaction usage type (active vs. passive) and content exposure (inspiring vs. hedonic) within the context of social media, applying the two-factor model of entertainment (Vorderer & Reinecke, 2015).

Given the small cell sizes per condition, we adopted Bowman's (2017) approach and interpreted marginally significant differences as (potentially) meaningful based on effect-size values, predetermined from past research. Using this approach, we contend that the results tentatively point to the power of purposefully searching for and sharing inspiring content on Facebook, as evidenced with several outward-oriented emotional effects. Over time, sharing inspiring content on Facebook led participants to experience a meaningful increase in love and compassion toward others (i.e., loving many people, finding it easy to trust others, noticing people who need help). Furthermore, participants in the inspiring condition experienced significantly more compassion over time (i.e., pre- to post) than individuals in the hedonic condition. This finding highlights the inherent differences between inspiring/eudaimonic and hedonic content previously discussed and observed (e.g., Oliver et al., 2018; Vorderer & Reinecke, 2015). These results also lend support to self-effects theories (Valkenburg, 2017). The sharing of content perceived as inspiring may over time reinforce a person's self-concept of being a compassionate person. It may further underline the unique role of social media's impact on identity development concerning the type of content we share. Although the sizes of the effects were small, they are noteworthy given that participants used Facebook in inspirational ways for only limited time intervals (i.e., five minutes per day). These findings demonstrate how even small changes in social media behaviors may benefit well-being.

Interestingly, compassion levels were similar between the active/inspiring and passive browsing conditions. Research has shown that passive social media use can produce an ambient awareness of social others (Levordashka & Utz, 2016), which in turn can increase levels of compassion toward others, regardless of the content people encountered. In the current study, it appears that passive users felt compassion more so (at least descriptively) than participants who shared hedonic content, with the latter perhaps only reinforcing humorous aspects of a participant's self-concept over time.

Contrary to our expectations, we found no changes over time in connectedness to humanity for participants in the inspiring condition. The presence of meaning in life trended higher for the inspiring condition, but the effect was neither significant nor meaningful (per effect size). It is possible that finding and sharing inspiring content on Facebook for only five minutes a day may simply not be enough to impact a person's end-of-day experience of meaningfulness or connectedness, even over time. Myriad factors and situations throughout the day can influence such evaluations, overshadowing any momentary shifts in meaning and connectedness from Facebook use. However, it is noteworthy that Facebook use for short amounts of time per day also seems not to take away from a broader feeling of connection to humanity over time or meaning in life. Future studies could apply an Ecological Momentary Assessment (EMA) protocol, allowing us to observe immediate experiences from social media use to investigate these issues further.

Furthermore, we did not observe significant or meaningful post-study differences in connectedness, love, or meaning in life between conditions. However, descriptively, the results trended in the expected direction of enhanced effects for the inspiring condition in all outcome variables. Perhaps strengthening the statistical power in each condition might yield significant effects. Furthermore, previous research has emphasized the importance of self-transcendent emotional responses from media as a necessary predictor of connectedness and altruism responses (Janicke & Oliver, 2017; Krämer et al., 2017; Neubaum et al., 2020). Thus, it stands to reason that Facebook consumption may only lead to eudaimonic well-being effects *if* participants experience a sense of gratitude, elevation, inspiration, or hope when using the platform either actively or passively. We encourage future research to assess self-transcendent emotions as a response to engagement with inspiring social media in situ and investigate its role in predicting subsequent eudaimonic well-being effects.

Further, neither active nor passive use of Facebook affected symptoms of anxiety or depression over time. The broaden-and-build framework (Fredrickson, 2001; Garland et al., 2010) would suggest that symptomatology should decrease over time for participants in the hedonic and inspiring Facebook posting conditions, as the repeated experience of positive emotions from both content types should be beneficial. Nevertheless, the null findings may be explained by the limited amount of time spent on Facebook interacting with that content in the study. That is, five minutes per day spent engaging with inspiring or hedonic content may simply not be enough time to sufficiently increase positive emotions to affect depressive or anxiety symptoms. Future studies could explore the effects of specific content sharing for the equivalent time a person generally spends on social media sites to enhance ecological validity and treatment strengths. Regardless, the good news is that the study's required

Facebook use did not *negatively* affect anxiety and depressive moods, as observed in previous studies (e.g., Burnell et al., 2019).

More broadly, the current study extends previous active-use research, which has generally ignored the effects of specific content characteristics (e.g., Burke et al., 2010). The study indicates that content certainly plays a role in evaluating mental-health effects, though it should not be regarded in isolation. How users interact with the content (i.e., liking, commenting) could further impact the effects of the content. For example, more costly interactive behavior (i.e., commenting vs. liking) might increase the experience from the type of content consumed. To explain: Well-being may be *increased* when a person interacts in a costly way (e.g., commenting) with inspiring or otherwise positively perceived content (for example, through an increase in social capital; Verduyn et al., 2017), but well-being could also be *decreased* (and psychopathology increased) when the interaction involves negative content (e.g., appearance-focused posts; Holland & Tiggemann, 2016). Future research could explore these interaction effects further.

In addition, the study supports the notion that the *active use* = *good* and *passive use* = *bad* distinction is too simplified (see also Trifiro & Gerson, 2019). Browsing Facebook for five (additional) minutes per day did not impact depression or anxiety positively or negatively. Some research points toward a threshold of time spent on different media platforms that leaves one with neither positive nor negative mental-health effects (e.g., Hao, 2017; Przybylski & Weinstein, 2017). In addition, whether browsing behavior leads to a negative or positive impact on mental-health depends on the personalized news feed to which a social media user is exposed. These differential mental health effects highlight the need to further investigate what content young adults who experience anxiety and depression are exposed to when using social media. Sharing Facebook content perceived to be moving, touching, and inspiring seems to provide immediate benefits for people's feelings of love and compassion over time.

Despite the insights gained, we should note several limitations of the current study. First, notwithstanding the benefits of a longitudinal quasi-experimental design, the daily time spent on Facebook in each condition was very small to elicit a pronounced effect, as alluded to above. Given that young adults spend three hours per day on average across various social media platforms (Georgiev, 2021), future research should consider increasing the required time spent on the platform to boost treatment strength.

Second, the quasi-experimental nature of the study could not control all threats to internal validity. A pure experimental design where people browse or interact with a mock-up social media site could increase internal validity in future studies. However, our project yields ecological validity by having people use their own Facebook feeds to search for content. Although this design allows for more appropriate generalizations of the results, it also weakened our condition manipulation. We could not (nor did we attempt to) control the participants' overall use of Facebook across the two weeks of the study. Individuals in the inspiration condition likely encountered disturbing or negative posts on their Facebook newsfeeds over the course of the two weeks, and persons in the passive use condition perhaps shared inspiring content. The content conditions (active vs. passive, inspiring vs. hedonic) only applied to the specific instructions associated with the study. Participants were free to use Facebook and other social media sites as they wanted across the two weeks. This methodological decision—though made to increase ecological validity—quite possibly led to an attenuation of expected effects due to the condition assignments.

Additionally, because inspiration is highly idiosyncratic (Klimmt, 2011), it was impossible to control whether the content participants in the inspiring condition shared was "actually" inspiring. Although a content analysis of the shared posts (see Footnote 3) or manipulation checks to measure participants' levels of inspiration from the posts they shared might partially resolve this problem in future studies, those data are either unavailable or were not collected. Nevertheless, we contend that our condition manipulation was successful based on previous research that clearly shows a difference in people's experiences of, for instance, recalling inspiring or hedonic media content from the past (i.e., Janicke et al., 2018; Janicke & Oliver, 2017). Ultimately, though, replicating this study with an actual experimental design is warranted, which also could eliminate any problems resulting from the later addition of the passive condition.

Fourth, the study admittedly relied upon a small sample, with unequal sizes in each condition, making it more difficult to detect significant effects. Longitudinal studies, of course, are notoriously difficult to conduct due to issue of attrition or costs. However, as the supplemental analyses point out, we find more differences in the groups in the cleaned than uncleaned dataset. In line with previous research (i.e., Kam & Chan, 2018), inattentive responses attenuated some of the differences that became apparent in the cleaned data set. Thus, our data, even

from a small sample, indicates tentative support for several of our hypotheses. Still, replications with a larger sample are needed and results should be interpreted with caution.

Fifth, at the time of data collection, young adults were actually spending more time on Instagram than Facebook (Janicke et al., 2018). Consequently, participant attitudes toward Facebook, in general, may have undermined the treatment strength. Previous research indicates that young adults feel inspired when they see beautiful nature content and engage in assimilative comparison on Instagram (Meier et al., 2020). Future research could explore how finding and sharing inspiring posts on Instagram, Snapchat, or TikTok leads to feelings of self-transcendence and outward-oriented eudaimonic well-being effects (i.e., connectedness, prosociality).

Moreover, the study focused only on sharing and tagging of content. It thus did not consider the interpersonal interactions (Clark et al., 2018) people engage in regularly on Facebook or other people's interactions with the content (comments, likes) they consumed or shared. These, interactions, of course, can also contribute to eudaimonic well-being effects and decreases in mental health symptoms. Future research should consider the social affordances of social media more prominently.

Lastly, the sample was predominantly female and White, limiting generalizability.

Conclusion

In conclusion, this study was a first attempt to explore the usage type and content interaction on Facebook from an entertainment theory lens on mental-health and well-being effects, an area that has received scant attention in social media research to date (for exceptions, see Janicke et al., 2018; Meier et al., 2020; Rieger & Klimmt, 2019). Practically speaking, this is important because the content people interact with on social media can be easily manipulated. We hope future research will continue to explore the complex nature of social media's effects on mental health.

Footnotes

[1] Only a subset of variables from this project were analyzed for this manuscript. The other variables assessed in this study are reported elsewhere and can be shared by the lead author upon request.

[2] Due to privacy changes in Facebook the researchers are no longer able to access the Facebook Group pages with their respective content posts for follow-up analyses.

[3] The control group was added later to avoid treatment diffusion between the participants. The same protocols used in the treatment conditions were used with the control group. One individual in the control group had participated in a treatment group; those data were deleted from the sample.

Acknowledgement

Conflict of Interest

The Authors declare that there is no conflict of interest.

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