Social media, social support, and adolescents' well-being

The association between sharing something difficult on social media and mental well-being among adolescents

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Preface

A couple of months after I started the master program, my father became ill with cancer. And just a few weeks later, he sadly passed away. A year and a half have gone by since then and my master thesis is finally in a state that is, hopefully, complete. When I think back at the time just after my father died, I recall (and still can see) that I received birthday wishes on Facebook on the day after his funeral. And in between these greetings, I decided to share with my friends via a status update on Facebook that my beloved father had passed away (and of course, show my appreciation for all the birthday wishes). So, in addition to birthday greetings, I received many condolences in the comments section and even more "likes". Not so many likes but rather heart emojis and hugging heart emojis. Even though I at the time was deeply saddened and found things difficult, I felt the response from friends on Facebook was supportive. Kind words were written about my father from friends I have not met or spoken to in many years. I received private messages from friends I had not talked to for a long time, and from closer friends.

I am thankful and appreciate all the support and motivation from friends and family during the study program. I would like to thank my fellow students for great discussions, support, and evolved friendships.

I would like to thank my supervisors at the University of Bergen. Thank you, Ingrid Holsen, for the initial guidance of the master thesis and for giving me the opportunity to write in this thesis format. Ellen Haug, thank you for your thorough feedbacks and guidance all the way to the finish line. It is highly appreciated.

Thank you very much, Jens Christoffer Skogen and Gunnhild Johnsen Hjetland, my supervisors at the Norwegian Institute of Public Health (NIPH). I am very thankful for your help and guidance throughout the year. Your enthusiasm and feedback have truly been appreciated. At last, I want to thank the people at NIPH in Bergen for letting me use their premises not only as an office space, but also for their including vibe.

Bergen, May 2022

Bjarte Birkeland Kysnes

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Summary

The current master thesis is written as a journal article with an introductory text. This design has previously not been an option in this study program. However, the guidelines from the *Child Protection and Welfare* study program have been adapted for the present thesis in cooperation and agreement with the University of Bergen. The journal article is written in a format according to the author guidelines of *Frontiers in Psychology* (Appendix II). The article is written for the purpose of publication.

The aim of present thesis was to explore adolescents' experiences with sharing something difficult through social media and its relation to well-being. The thesis consists of a journal article (Appendix III), which is the primary work of the thesis. In addition, an introductory text was written for the purpose of elaborating on relevant aspects for the master thesis touched upon in the article. This includes health promotion, social media, well-being, social support, self-disclosure, the literature search, and methodology. Methodological procedures, data collection and measurements, and the results and the discussion are covered in the article.

The introduction text of the current thesis gives a brief insight into health promotion and national Norwegian strategies for health promotion work, and social media as a potential arena for supportive environment among adolescents. Further, definitions and interpretations of important concepts used in the article are presented. Well-being and social media are both terms with no generally accepted definitions. In addition, theories related to the understanding of sharing (self-disclosure) and social support have been elaborated on. The relational regulation theory emphasizes the association between social support and well-being, while self-disclosure is argued to be a prerequisite for being able to obtain social support. The relevance of these theories in relation to social media interaction will be presented. A literature search was performed to get an overview of the existing literature on sharing and self-disclosure on social media and the associations with social support and well-being among adolescents. The literature search strategy is presented in the introductory text with the method and design characteristics of the included studies.

Moreover, the philosophical foundation for science is presented, and the current study is argued to be based on a post-positivistic approach using quantitative methods. The design of the study and implications for causal inference, as well as relevant aspects of reliability and validity will be presented and discussed. Also, the set of general assumptions made when

conducting linear regression analysis are further described. Finally, an overview of the ethical considerations in research on human beings relevant for this thesis are presented.

1.0 Introduction

Social media has become part of everyday life, seeming to occupy a significant amount of time in most people's life. Today's adolescents have grown up in a time where social media has always been present and accessible. According to a recent report, as many as 98-99 % of Norwegian adolescents aged 13-18 reported having at least one social media account (Medietilsynet, 2020). Furthermore, time spent on social media has increased rapidly, with 45 % of adolescents now spending two or more hours each day on social media (Bakken, 2021). The increase in social media use has previously and at present led to concerns of potential negative impacts on mental health and well-being among adolescents (Bell et al., 2015; Boer et al., 2020; Valkenburg et al., 2022; Verduyn et al., 2017).

Mental health is defined as "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community" (WHO, 2018). The definition of mental health refers to a positive functioning and reflects that health is more than merely the absence of disease or illness (WHO, 2018). The definition of health promotion is "the process of enabling people to increase control over, and to improve, their health" (WHO, 1986). Further, health is "a positive concept emphasizing social and personal resources, as well as physical capacities." (WHO, 1986).

One of the aims emphasized by the Norwegian government is to create a health-promoting environment for the entire population (Meld.St.19 (2018-2019)). Furthermore, a key strategy by the government is to promote mental health among adolescents (Helse- og omsorgsdepartementet, 2017). Access to environments of social support, friendships, and positive relations among peers and adults should be a priority, as this is argued to contribute to promoting mental health (Meld.St.19 (2018-2019)). This aligns with WHO (2018) and their emphasis on creating supportive environments that may improve psychological well-being and mental health. In one of their key strategies in "Mestre hele livet" (Helse- og omsorgsdepartementet, 2017), the Norwegian government stresses that research on social media and its effect on mental health and well-being is required. Further, the strategy emphasizes the need to facilitate greater knowledge on positive aspects of social media use.

More than 80 % of 13-18-year-olds using social media reported having a lot of contact with their friends through such platforms (Medietilsynet, 2020, p. 5). Considering the high prevalence in use and social interactions, social media might be an arena for potential

supportive environments among adolescents. It may also be more likely that they share personal feelings and difficulties via social media platforms. Therefore, the reactions they might receive from their peers and adults, and if they perceive these reactions or interactions as supportive could interest research. Further, investigating the relationship this may have on mental health and well-being is in line with the strategy of facilitating knowledge on possible positive aspects of social media use.

1.1 The aim of the thesis and research questions

The present thesis aimed to investigate adolescents' experiences with sharing something difficult through social media and its relationship with mental well-being. The research questions investigated in the article were:

- Is sharing something difficult on social media associated with adolescents' well-being?
- To what extent is perceived social support after sharing something difficult on social media associated with adolescents' well-being?
- Are there gender differences in the associations between sharing something difficult on social media and well-being?

2.0 Clarification of concepts

Central concepts in the current study are *well-being* and *social media*. Measures and definitions of well-being have been up for debate, and the term social media is not necessarily operationalized in the same way across the literature and research. Thus, some clarification of the two concepts follows in this section.

2.1 Mental well-being

Defining well-being is not a straightforward task. Different ways of operationalizing and measuring the construct have been proposed over the years, which is evident in extensive literature (Cantril, 1965; Carlquist, 2015; Diener et al., 2002; Keyes, 2013; Ryan & Deci, 2001; Ryff, 1989). Traditionally, well-being is a construct that has been derived from two perspectives: the hedonic approach and the eudaimonic approach (Keyes, 2013, p. 7; Ryan & Deci, 2001, p. 141). The hedonic perspective is mainly concerned with exploring subjective emotional well-being and could be referred to as life satisfaction, happiness, and positive or negative affect (Keyes, 2013, p. 6). Subjective well-being has been defined as a person's cognitive and affective evaluations of their life. High subjective well-being is associated with

pleasant feelings, higher life satisfaction, and lower levels of depressed mood (Diener et al., 2002, p. 63).

The term eudaimonia was discussed by the philosopher Aristotle and refers to striving toward excellence and positive functioning (Keyes, 2013, p. 3). Led by this perspective, Ryff (1989) proposed six dimensions of well-being reflecting positive psychological functioning. The dimensions point to aspects of positive functioning that include self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth (Ryff, 1989). The Scale of Psychological Well-being (SPWB) uses these dimensions as sub-scale measures (Ryff & Keyes, 1995).

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) was developed to combine the hedonic and eudaimonic perspectives and include subjective and psychological well-being, capturing a broad conceptualization of the construct (Stewart-Brown, 2013; Tennant et al., 2007). The scale focuses on positive mental health, composed of only positively worded items (Tennant et al., 2007). The chosen measure of mental well-being as an outcome variable in current study was the WEMWBS. A validated Norwegian version of the scale was used in the questionnaire (Smith et al., 2017), and the scale is also validated among Norwegian adolescents (Ringdal et al., 2018).

2.2 Social media

The term "social media" could seem to be facing a *jingle-jangle problem*, meaning different terms are used referring to the same phenomena (Kross et al., 2021), and no standard accepted definition among researchers appears to exist (Bayer et al., 2020). Moreover, one must consider that social media technology is rapidly evolving, making it a moving target that is constantly changing and challenging to precisely measure. A recent umbrella review on the topic refers to terms like "digital media use", "digital technology use", or "social media use" (Valkenburg et al., 2022). The term "social networking site" has also been frequently used in literature and research (Valkenburg et al., 2022) and is primarily understood as a sub-category of social media (Bayer et al., 2020). Making it more comprehensive, distinctions between "social network sites" and "social networking sites" have also been made (Ellison & Boyd, 2013). Social networking sites are argued to imply connecting to new people and the practice of networking (verb), while social network sites allow individuals to present their own and view others' social networks (noun) (Ellison & Boyd, 2013, p. 158-159). Regardless of this distinction, one can assume that both would contain the three core elements of unique

profiles, network, and stream (Bayer et al., 2020). Examples of social network(ing) sites are Instagram, Snapchat, Twitter, Facebook, and TikTok.

Nevertheless, one definition of social media often referred to is: "mobile and web-based technologies that create highly interactive platforms via which individuals and communities share, co-create, discuss, and modify user-generated content" (Kietzmann et al., 2011). This definition is broad, and in addition to social network(ing) sites it includes other platforms like blogs, discussion forums and content-sharing sites (YouTube) (Stoycheff et al., 2017). To make it more consistent, indicators like "digital media (use)" and "social network(ing) (use)" used in previous studies are referred to as social media (use) in the present thesis.

3.0 Theoretical framework

This chapter presents two different theories to help understand the process of sharing in social media and assumed positive outcomes. Initially, the concept of social support is presented, followed by a theory developed as a new approach to explain the relationship between perceived social support and mental health. Second, the self-disclosure theory draws on the specific action of sharing information about oneself, and the theory relates it to social support and mental health and well-being.

3.1 Social Support and The Relational Regulation Theory (RRT)

Acquiring and maintaining social resources is important, especially during adolescence, for human well-being and positive development (Patton et al., 2016, p. 2427). Friends, family, teachers, and others might serve as social resources by providing social support to the individual (Thoits, 1995, p. 64). There is no clear consensus on the definition of social support. Barrera (1986, p. 415-417) refers to three broad categories: social embeddedness, enacted support, and perceived social support. Social embeddedness refers to the social connections individuals have to significant others and might represent the contrast to social isolation from the social environment (Barrera, 1986, p. 415). The enacted support refers to an individual's actual support or assistance received from others. Lastly, perceived social support refers to the perception and appraisal that support will be available from others when needed (Barrera, 1986, p. 417). The three categories of social support, and perceived social support in particular, has been positively associated with mental health and well-being (Barrera, 1986; Chu et al., 2010; Cohen & Wills, 1985; Taylor, 2007; Thoits, 2011). Social support through social media and positive association with adolescent's well-being has also been indicated in studies (Best et al., 2014; Quinn, 2019; Webster et al., 2021).

Cohen and Wills (1985) distinguish between a main effect of social support and a stress-buffering effect. Stress buffering occurs when social support is thought to "buffer" or intervene a stress reaction, thereby protecting and preventing the adverse effects of stress. On the other hand, the main effects occur independently of stress reactions and relate to an overall beneficial effect of social support and social relationships (Cohen et al., 2000, p. 11; Cohen & Wills, 1985). The main effects have to a lesser extent been explained theoretically compared to the stress buffering theory. This led Lakey and Orehek (2011) to develop the relational regulation theory (RRT) of the main effects between perceived social support and mental health.

RRT seeks to explain the linkage between perceived social support and emotional and affective disturbances in both adults and adolescents (Lakey & Orehek, 2011). The theory consists of eight core principles covering aspects such as ordinary social interaction, conversations and shared activities, dynamic interactions, and diversity of potential relationships. These principles are proposed to regulate affect, thought and action of the recipient. The first principle states that this proposed regulation primarily occurs through social interactions. In contrast to stress-buffer theory which concentrates on "coping" during stress, RRT emphasizes the regular and everyday social interaction that may impact the relationship between social support and mental health (Lakey & Orehek, 2011). For adolescents, social media is now a common arena for everyday social interaction. By this means, social media interactions may impact the relationship between social support and mental health. Another principle points to the dynamic shift in interaction partners, conversations and activities as an effort to regulate affect. For instance, dyadic interactions between friends or family members and the ability to regulate each other will shift with regards to whom and what affect they regulate. This relates to current study and how social media could create opportunities for quick and dynamic shift in interaction partners, as well as potentially several dyadic (and one-to-many) conversation partners at once. The last of the eight principles highlight that the greater the diversity of relationships, the greater the chance of effective regulation. For example, the internet may provide an essential advantage in relational regulation, as physical presence it not acquired when providing support through the internet or social media (Lakey & Orehek, 2011).

Lakey and Orehek (2011) argues that RRT could be applied to negative thoughts and feelings and behaviors associated with psychological distress, such as support seeking. Following this

argument, one could assume that RRT applies to current study on social support seeking or sharing something difficult on social media.

3.2 Sharing and theories of self-disclosure

Sharing difficult feelings and thoughts relates to the term self-disclosure. Self-disclosure has been defined as information about oneself communicated verbally to another person (Cozby, 1973). Masur (2019, p. 70) proposes another definition of self-disclosure as "the intentional communication of information about the self to another person or group of people." This definition does not specify that the information must be verbal, and does not exclude other information sharing (e.g., photos/videos). Further, the definition makes one able to distinguish between *dyadic* or small group interactions, and *one-to-many* communication (Masur, 2019, p. 74-79). Self-disclosure through social media seems to fit this definition quite well, considering the use of both photos and videos on social media platforms and the opportunity to share with a greater audience.

Derlega et al. (1993, p. 111) emphasizes that "self-disclosure is a vehicle for obtaining social support that might not be available if other people did not know about one's difficulties." The beneficial effects of self-disclosing negative feelings or upsetting experiences are derived from the reactions of those shared to, and may result in feeling accepted, loved and valued even through difficult times (Derlega et al., 1993, p. 101). Therefore, self-disclosure or sharing information about oneself, is considered a crucial path for social support. A theoretical framework has been developed by Luo and Hancock (2020) on the effects of self-disclosure in social media on psychological well-being. Perceived social support through self-disclosure is one of several mechanisms they propose to have a positive effect on well-being. The effects (relationships) are suggested as bi-directional (Luo & Hancock, 2020). Self-disclosure could affect well-being, and well-being states might influence disclosure motivations. Motivations to self-disclose in social media are suggested to be intra-personal (self-expression/relief and identity clarification) and interpersonal (relational maintenance and social validation) (Luo & Hancock, 2020).

How often one self-disclose and to whom may lead to different outcomes. Cozby (1973) hypothesizes a curvilinear relationship between self-disclosure and mental health, based on Jourard (1964). It is proposed that individuals characterized by high dyadic disclosure and medium one-to-many disclosure display positive mental health compared to those who are either high or low in disclosing (both dyadic or one-to-many), who may show decreased mental health (Cozby, 1973, p. 78). Furthermore, studies have shown that males tend to be

low in disclosing personal or intimate feelings compared to females (Derlega et al., 1981; Jourard, 1971). The current study relates to these findings and hypothesis as it investigates the dyadic (private) and one-to-many (public) self-disclosure in social media and associations with perceived social support and well-being, as well as differences between females and males in sharing difficulties.

4.0 Literature search strategy and characteristics of the studies

Before conducting this study, it was necessary to examine the existing literature that investigates the relationships between social media use, self-disclosure, and well-being among adolescents. A literature search strategy was developed. Key terms related to the research question were: *adolescence, social media, sharing, social support,* and *well-being.* The initial search identified similar and often used words related to the key terms. This led to several alternative words for each key term, for instance, *self-disclosure* for sharing. The alternative words were combined with OR (e.g., "social support" OR "perceived social support"), and the key terms were combined with AND. Databases used for searching included *PsychINFO* and *Web of Science.* Using other databases could have yielded different results from the search. However, PsychInfo and Web of Science are two international databases commonly used and covers a wide range of studies in both the psychological and the social science field.

Qualitative and quantitative research was included in the search, and both primary research and reviews were eligible. Search results were limited to publications from 2011 to 2021 and only published peer-reviewed articles were included. The main age range of interest was 16-19 years, but some studies deviating from this were included due to relevance and possible transferability if they focused on adolescents or young adults. Studies published in languages other than English or Norwegian were excluded. Intervention studies, studies with a treatment focus, and clinical studies were excluded (e.g., studies on social media and psychosis or mental health services). However, some studies regarding depression/depressed mood and anxiety were included due to the relationship these have as "opposite" outcome measures to well-being and are somewhat transferable. After screening for duplicates, the search yielded 286 unique hits. Relevant papers (n=80) were chosen from the search by reading through titles and abstracts and were read in full. Of these, a total of 16 articles were selected. Additional research literature was found using a snowballing approach, reviewing the reference list of identified papers.

The majority of the included studies were quantitative (14) and only two were qualitative. In relation to the study design, a cross-sectional design was conducted in nine of the included studies. A longitudinal design was used in three of the studies, one was a narrative review, and one was a systematic narrative review. For the two qualitative studies, one used an individual interview design, and one used a focus-group interview design.

5.0 Methodology

5.1 Philosophical foundations

There is an agreement that there are multiple ways to do science and different ways to understand reality. The term *paradigm* was introduced by the social scientist Auguste Comte (1798-1857) (Grønmo, 2016, p. 21). A paradigm refers to "a set of assumptions about the world, and about what constitute proper topics and techniques of inquiring into that world" (Punch, 2014, p. 31). In terms of science, a paradigm should include basic assumptions, important questions or problems to be solved, research techniques, and definitions of adequate scientific research (Neuman, 2014, p. 94).

Ontology, epistemology, and methodology are central terms when considering a paradigm (Punch, 2014, p. 32). Ontology is a philosophical term that refers to understanding what reality is like or the nature of being and existence (Neuman, 2014, p. 92). Epistemology refers to generating knowledge and how this relates to the researcher and his/her reality (Punch, 2014, p. 32). Finally, the methodology involves the types of methods used to study reality (Punch, 2014, p. 32). Two of the main approaches or paradigms in science are *interpretivism/constructivism* and *positivism* (Neuman, 2014, p. 94; Punch, 2014). A positivist scientist holds what is called a realist position within ontology and epistemology, while the interpretivist take on a nominalist position (Neuman, 2014, p. 92). In ontology, the realist will presume that the real world is organized by already established categories independently from human interpretation. In other words, the world is out there and what you see is what you get, with no further complexities. The nominalist and interpretivist on the other hand, emphasizes that the reality is observed and occurs through interpretations and subjectivity (Neuman, 2014, p. 92). Regarding epistemology the realist would attain knowledge about the real world by precise observations making empirical evidence, while the nominalist would claim that those observations are influenced by interpretations and subjective views (Neuman, 2014). Thereby, the nominalist in social research produce knowledge based on reflections,

interpretations and inductive observations of people in specific contexts (Neuman, 2014, p. 93).

An inductive approach implies that the researcher makes discoveries in reality, transferring those observations to general principles, which in turn could compose a theory (Olsson & Sörensen, 2003, p. 37). This approach is typically seen in qualitative research and methods, and is associated with the paradigm of constructivism/interpretivism (Punch, 2014, p. 34). This leads us to the methodology within the paradigms. Yilmaz (2013, p. 312) has modified and defined qualitative research as:

> "…an emergent, inductive, interpretive, and naturalistic approach to the study of people, cases, phenomena, social situations, and processes in their natural settings in order to reveal in descriptive terms the meanings that people attach to their experiences of the world".

The qualitative researchers typically uses observations, interviews, focus groups and document analysis, and often present their results as a narrative text (Yilmaz, 2013, p. 315).

The deductive approach, in contrast to the inductive, is based on existing theory and makes conclusions from the general to the specifics (Olsson & Sörensen, 2003, p. 37). The current study used existing theory and research on the field, making it a deductive approach. This approach further relates to the positivist paradigm (Neuman, 2014, p. 95). Positivism is defined as "the belief that objective accounts of the world can be given, and that the function of science is to develop descriptions and explanations in the form of universal laws – that is, to develop nomothetic knowledge" (Punch, 2014, p. 34). Post-positivism was later introduced as a response to positivism, emphasizing interpretation and recognizing that one does not know, or may reach, the absolute truth (Creswell & Creswell, 2018, p. 6). The positivist or postpositivist paradigm is a view that relates to quantitative methods (Creswell & Creswell, 2018, p. 6), and aims at predicting phenomena, generalizing, and explaining causal relationships (Yilmaz, 2013). Approaching these aims in social science is usually accomplished using precise quantitative data and surveys, experiments, and statistics (Neuman, 2014, p. 95). However, the present study is based on a post-positivistic paradigm, meaning that it recognizes that the data, measures, and results does not represent the absolute truth. Furthermore, it cannot be claimed that current study uses precise data, and experiments are not conducted.

Quantitative research could be defined, at its simplest, as research that explains reality using numerical data that is statistically analyzed (Yilmaz, 2013). Traditionally, quantitative research follows the steps of conceptualizing reality in terms of variables, measuring those variables, and examining the associations between the variables (Creswell & Creswell, 2018, p. 136; Punch, 2014, p. 213). While a theory explains a broad range of phenomena with some founded principles, a hypothesis seeks to present a more limited and untested phenomenon (Field, 2018, p. 5). This could be applied to the present study, using theories on social support and concepts of social media, and then narrowing the subject to what is believed to be an untested phenomenon (in this case, sharing something difficult and the association with well-being among adolescents). Hypotheses are common in quantitative research, with researchers predicting outcomes of relationships among variables (Creswell & Creswell, 2018, p. 136). There are different types of hypotheses, i.e., null, and directional (Creswell & Creswell, 2018, p. 137). A null hypothesis infers no relationship or difference between groups on a variable (Creswell & Creswell, 2018, p. 137). In current study for instance, a null hypothesis could claim that self-disclosure is not associated with well-being or social support, and that there are no differences between males and females. In statistics, a null hypothesis is tested for what is called significance, allowing the researcher to either reject or accept the hypothesis (Field, 2018, p. 76). When the researcher makes predictions about outcomes based on pre-existing literature on the topic, the hypothesis is directional (Creswell & Creswell, 2018, p. 138). A directional hypothesis will claim that an effect must occur and state the direction of claimed effect (Field, 2018, p. 74).

The hypotheses and research questions guide the researcher to choose a research method (Olsson & Sörensen, 2003). The research question in this study is to investigate relationships between variables, which requires a quantitative approach. A cross-sectional study is a research design within quantitative methods and is characterized by collecting data at one point in time (Creswell & Creswell, 2018, p. 149; Field, 2018, p. 19; Punch, 2014, p. 231). The present study is based on a survey administered at one point in time, with selected variables to analyze. Thus, it can be defined as a cross-sectional study. A research design using cross-sectional data are, however, not able to give causal explanations but can tell the scientists if variables co-occur or are associated (Field, 2018, p. 19).

5.2 Quality of measurement

When conducting research, it is essential to consider the data and data collection quality. The quality of the data must be related to the context in which it is to be used (Grønmo, 2016, p.

237). High quality exists when the data material is suitable for enlightening the research questions. Different criteria are used when assessing quality, but the most important ones are *reliability* and *validity* (Grønmo, 2016, p. 237).

5.2.1 Reliability

Reliability refers to what extent a measuring instrument produces the same results under the same conditions and that the instrument is consistently interpreted within different situations (Field, 2018, p. 19). Consistency could be measured as internal consistency and measured over time (Punch, 2014, p. 242). To examine internal consistency, there is a need to investigate the correlation between items on a multi-item scale. This is important because the items should be correlated with each other and measure the same essential constructs (Creswell & Creswell, 2018, p. 154). Estimation of internal consistency requires only one administration of the measuring instrument at one point in time, and indicators of internal consistency are "split-half"-reliability and Cronbach's alpha (Cozby & Bates, 2012, p. 99; Punch, 2014, p. 243). The "split-half" method investigates correlations between one half of the scale with the other half of the scale. Cronbach's alpha examines correlations between each item on a scale, giving an average score of possible "split-half" reliability coefficients (Cozby & Bates, 2012, p. 99). Values of Cronbach's alpha range between 0 to 1, with values above 0.7 being optimal (Creswell & Creswell, 2018, p. 154; Pallant, 2016, p. 104). This study's WEMWBS (14 items) showed a Cronbach's alpha of 0.93, indicating high internal consistency.

Consistency over time, or stability of an instrument, is called test-retest reliability, and entails testing a group twice with the same instrument (Field, 2018, p. 15; Punch, 2014, p. 243). Obtaining similar scores on both time points, given that one does not expect change over time, indicates that the instrument is reliable (Field, 2018, p. 15). Test-retest reliability was not a possibility in this study as it was cross-sectional. However, in a validation study, a test-retest have indicated high reliability (Cronbach's alpha of 0.83) for WEMWBS (Tennant et al., 2007).

5.2.2 Validity

Validity refers to the extent to which the instrument is measuring what it is supposed to measure (Field, 2018, p. 15; Punch, 2014, p. 244). There are mainly three types of validity: internal, external, and construct validity (Cozby & Bates, 2012, p. 69).

Internal validity refers to the causal relationship between cause and effect and the ability to conclude from the study results (Cozby & Bates, 2012, p. 85; Yilmaz, 2013). As noted earlier, cross-sectional studies cannot conclude on causality, only about the co-occurrence of variables (Cozby & Bates, 2012, p. 78; Field, 2018, p. 19). Researchers also face a problem with potential third variables. Two variables may co-occur, but it may as well be that another third variable is causing the relationship between the two (Cozby & Bates, 2012, p. 80). For instance, gender may be an alternative explanation for the observed relationship between social media use and well-being. Self-disclosure on social media and lower well-being may associate. However, maybe females disclose more on social media and report lower well-being than males. Therefore, the observed relationship may be affected by gender. To secure high internal validity, there is a need to adjust for potential third variables, and therefore age, gender, and frequency of use are some of the included control variables in the present study. It is worth noting that other possible third variables not included in this study may affect the results, such as socio-economic status.

External validity concerns the degree to which the research results can be generalized to other populations and settings (Cozby & Bates, 2012, p. 85; Punch, 2014, p. 323; Yilmaz, 2013). For instance, if the study were replicated in another geographical are and showed the same results, it would indicate greater external validity (Cozby & Bates, 2012, p. 86). The current survey was piloted in another municipality, showing the same tendencies and similar results (J.C. Skogen, personal communication, April 26th, 2022). In addition, statistical generalization in quantitative research often requires probability sampling (Grønmo, 2016, p. 106; Punch, 2014, p. 172). The measurements of a variable should preferably be taken from a sample representative of a larger population (Punch, 2014, p. 172). The participation rate in current study was 51,1%. Validity and generalization could be biased by the participation (Galea & Tracy, 2007). Declines in survey participation rates has been reported over the last decades, with some dropping about 20 % to a participation rate around 50 % (Galea & Tracy, 2007). However, differences have been emphasized between generalizing survey results and the results of association studies (Knudsen et al., 2010). While low participation rate may be unfavorable for descriptive and prevalence estimates, it is argued that low a participation rate does not have substantial influence on estimates of predictor/outcome associations (Galea & Tracy, 2007; Knudsen et al., 2010).

Construct validity refers to the operational definitions of a variable and the coherence with theoretical definitions of the variable (Cozby & Bates, 2012, p. 101; Grønmo, 2016, p. 252).

Face validity is a sub-category of construct validity and refers to the measure appearing to be accurately assessing the variable of interest (Cozby & Bates, 2012, p. 103). Face validity involves the researcher judging the content of the measure to actually measure the defined variable (Cozby & Bates, 2012, p. 103). The assessment of face validity is not necessarily based on initial research or thorough discussions but instead on traits or features that are seemingly obvious to the researcher and others (Grønmo, 2016, p. 252). In that respect, measuring perceived social support in this study was partly done by face validity, as it was not based on an existing validated measure of the variable. However, the questions (items) of the variable measure of social support were based on prior focus group interviews done by Hjetland et al. (2021) and discussions in the project group which also includes a resource group of adolescents. This would strengthen the face validity in current study, as the items should be judged by the respondents (adolescence) and how they perceive it, and not by experts on the field (Streiner et al., 2015, p. 80).

5.3 Procedure, data collection and data analyses

The current chapter mentions a few aspects not covered in the methods section in the article. In addition, a description is made of the assumptions considered when conducting the linear regression analyses.

The basis of the survey is an innovative collaboration project called "Health promoting environment on social media". The aim is to identify how adolescents, schools and the municipality could create a health promoting environment on social media (Skogen & Hjetland, 2021). The analyses were performed at the premises of the Norwegian Institute of Public Health (NIPH) in Bergen. NIPH handed the data set as a file in IBM SPSS version 26, and only variables relevant to the study were included in the data set.

Factor analysis is an analytic technique used both in development and evaluation of scales (Pallant, 2016, p. 182). The aim is to reduce a set of variables into a smaller set of dimensions (factors) (Field, 2018, p. 779). The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) has 14 individual scale items, which is reduced to one common factor. In the current study, one chose not to conduct a factor analysis for the WEMWBS, as it is a validated and frequently used measure on well-being (Smith et al., 2017). The WEMWBS in present study was measured by Cronbach's alpha (0.93) to secure high reliability of the scale, meaning all the items appear to measure the same construct. The Cronbach's alpha value should ideally be above 0.7 (Field, 2018, p. 823).

5.3.1 Checking assumptions in the linear regression analyses

All statistical analyses have a set of assumptions of the data that must be met in order to use specific analytical approaches, such as when comparing groups or correlational and regression analysis (Pallant, 2016). An assumption is "a condition that ensures that what you're attempting to do works" (Field, 2018, p. 229). For this chapter section, the assumptions of the data that must be considered when using linear regression analyses is described, with one example of how to approach a violation of what is called normality.

As mentioned in the article, assumptions for the linear regression analyses were checked for linearity, homoscedasticity, and normality. The assumption of linearity indicates that the relationships between two variables should be in a straight line (linear) (Tabachnick & Fidell, 2013, p. 117). This is of importance because if the line is curved, describing the relationship between the variables in a linear regression model fails (Field, 2018, p. 230). Checking what is called the residuals plots and scatterplots could identify violation of linearity (Tabachnick & Fidell, 2013, p. 117). A nearly straight line should be seen when inspecting the scatterplots (Pallant, 2016, p. 130). In the current study, none of the variables had major violations of the assumptions of linearity.

Homoscedasticity is also known as the homogeneity of variance (Field, 2018, p. 237). For the present cross-sectional study, the homoscedasticity assumption means that the variance in the outcome variable (WEMWBS) should be about the same at all levels of the predictor variables (i.e., private and public sharing) (Tabachnick & Fidell, 2013). Checking this assumption can be done by looking at the scatterplots, who should be showing a rather cigar shaped distribution (Pallant, 2016, p. 130). No major violations were not found in the current study.

Lastly, normality refers to the normal distribution of the variables (Field, 2018, p. 230). A typical normal distributed variable is a symmetrical bell shaped curve with the mean value at center of the distribution (Pallant, 2016, p. 59). Assumptions of normality could be assessed, among other techniques, by examining skewness and kurtosis (Tabachnick & Fidell, 2013, p. 113). Skewness indicates the symmetry of the distribution, while kurtosis indicates if the distribution is peaked or flat. When a variable is skewed, the mean of the variable is not centered in the distribution (Tabachnick & Fidell, 2013, p. 113). In the current study, the second statement (received support) related to public sharing had a negative skewness distribution, indicating cases clustered to the right with high values (Pallant, 2016, p. 57). Skewness on scales and measures in social science, either positive or negative, is not

uncommon because of the nature of constructs (i.e., measures of life satisfaction are commonly negatively skewed) (Pallant, 2016, p. 64). Furthermore, transformation of variables is not necessarily recommended when there are violations of normality. Transformation involves to modify the scores mathematically using different formulas until the distribution appears to be normal (Pallant, 2016, p. 96). However, this approach is debated by researchers, and some argue that transformed variables may be harder to interpret when included in the analysis ((Tabachnick & Fidell, 2013, p. 120). Therefore, no transformations were made for the variables in the present study.

5.4 Ethical considerations

Research ethics is a source of applied ethics that sheds light on conducting research, planning research, communicating, and following up with research (Punch, 2014, p. 51). Research ethics apply to all types of scientific work. The Norwegian National Research Ethics Committees emphasizes that the guidelines for research ethics are made to enlighten researchers about ethical norms in research (NESH, 2018). Furthermore, the World Medical Association has developed ethical principles for medical research involving human subjects known as the Declaration of Helsinki (WMA, 2018). The current study has collected data taking these principles into account. This means that the researcher is bound to protect and respect the integrity of every single human being (NESH, 2018; Olsson & Sörensen, 2003, p. 56). Hence, the researcher must protect the individual's privacy by ensuring that data are stored and locked securely (Cozby & Bates, 2012, p. 43; NESH, 2018). Confidentiality and anonymity are essential aspects, securing that any unauthorized individuals do not get access to collected data and that the researcher or others cannot identify individuals (Cozby & Bates, 2012, p. 43; Olsson & Sörensen, 2003, p. 56). This is also determined by Norwegian laws (Helseforskningsloven, 2008; Personopplysningsloven, 2018).

Informed consent is another vital regulation in research ethics (Cozby & Bates, 2012, p. 44; Grønmo, 2016, p. 33). As an autonomic principle, before participating in a research project, the individuals should be informed about the purpose of the study and the potential harms or benefits of participation (Cozby & Bates, 2012, p. 44; Olsson & Sörensen, 2003, p. 59). In addition, potential participants should be informed that participation is voluntary and that withdrawal from the study can be made by the participants at any time without any negative consequences (Cozby & Bates, 2012, p. 44; Grønmo, 2016, p. 33; Olsson & Sörensen, 2003, p. 59). Before administering the questionnaire in the current study, respondents (all above age 16) were informed about the purpose of the study, that it was voluntary, confidential, and

anonymous, and the opportunity to withdraw from the study. Furthermore, the study received an ethics approval by the Regional Ethics Committee (REK).

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Appendix

Appendix I: Guidelines for a master thesis in an article format

Skrevet av Anette Christine Iversen, emneansvarlig MABARN351 22.10.2018 (oppdatert 20.05.2021)

Det følger av Retningslinjer for masteroppgaven i barnevern at det gis mulighet til å skrive masteroppgaven som en vitenskapelig artikkel etter avtale med veileder. Her følger litt utdypende informasjon om denne muligheten.

En vitenskapelig artikkel har høyere krav til skriftlig fremstilling, bidrag og presisjonsnivå enn en masteroppgave. Ved å få publisert en artikkel vil arbeidet bli tilgjengelig og synlig for et større publikum og flere vil kunne få nytte av kunnskapen.

Studenten må i samarbeid med veileder søke og gjøre seg kjent med aktuelle vitenskapelige tidsskrift og bestemme om artikkelen skal være på norsk eller engelsk. På NSD finnes en liste over alle publiseringskanaler (https://dbh.nsd.uib.no/publiseringskanaler/Forside). Norske tidsskrift kan søkes opp via søkeportalen IDUNN.no Aktuelle tidsskrift kan være Norges Barnevern, Fontene Forskning, Tidsskrift for velferdsforskning eller andre. Det finnes også et stort antall internasjonale tidsskrift for eksempel Child Care in Practice, European Journal of Social Work og mange flere. På tidsskriftenes hjemmeside finnes informasjon om hvilke tema tidsskriftet ønsker artikler om og hvilke lesere de henvender seg til. Noen tidsskrift er rettet mot et spesifikt fagfelt for eksempel sosialt arbeid eller barnevern mens andre tidsskrift er rettet mot et bredere publikum og er mer tverrfaglig. Noen retter seg mest mot forskere mens andre retter seg både mot forskere, praktikere og politikere. Dette er eksempel på forhold som bør vurderes og tas med i betraktningen når du skal velge tidsskrift, og vil også ha betydning for hvordan artikkelen utformes. De fleste tidsskrift har en forfatterveiledning som beskriver i mer detalj krav til form og innhold som kreves at følges, for eksempel antall ord som er tillatt, hvilke overskrifter en skal ha og hvilke referansestil. Vær oppmerksom på at ulike tidsskrift har ulike krav til form og struktur og egne forfatterveiledninger. Det er også nyttig å lese gjennom noen artikler i det valgte tidsskriftet for å gjøre seg kjent men form, struktur og stil.

Artikkelen skal utarbeides i tråd med tidsskriftets retningslinjer og forfatterveiledning. Det er ikke et krav at artikkelen publiseres. Det er vanlig at en artikkel må bearbeides videre før den kan sendes inn til tidsskrift etter at den er bedømt som masteroppgave. En må også regne å revidere artikkelen etter tilbakemelding fra tidsskriftets fagfeller og redaktør. Det skal avtales om veileder skal være medforfatter. Vancouver reglene for medforfatterskap skal følges.

Kappetekst

I tillegg til artikkelen må studenten levere en kappetekst på 15-18 sider. Dersom to studenter skriver artikkel sammen skal kappen være 30 - 35 sider. Ettersom en artikkel er mye mer fortettet og har begrensning på antall ord skal kappeteksten være en utdyping av teoretiske og metodiske aspekter, evt. andre tema som er lite dekket i artikkelmanuset. Ofte er det lite plass til teori i en artikkel og en mulighet kan være å gi en grundigere presentasjon av teori, det kan og være mulig å gi en grundigere forskningsgjennomgang. For noen tema kan være relevant å presentere nasjonale føringer, lover og forskrifter. På metodedelen er det mulig å utdype for eksempel vitenskapsteori, forskningsdesign, forskningsetikk. Siden ekstern sensor ofte er ukjent med denne formen anbefales det i innledningen på kappen å referere til retningslinjene for masteroppgaven å klargjøre hva som inngår i artikkelen, hvordan kappen er bygget opp og hva som tilføres, utdypes i denne i forhold til artikkelen.

Masteroppgaven leveres med samme forside som for monografi og inneholder kappetekst, artikkel og eventuelt andre vedlegg. Dersom artikkelen planlegges å publiseres bør en be om utsatt publisering (tilgjengelig gjøring) i BORA for en periode på ett til to år inntil artikkelen er publisert.

Appendix II: Author guidelines *Frontiers in Psychology*

The author guidelines in Frontiers in Psychology have some general standards. Firstly, the current article is following the format of an original research article. It should have a maximum of 12 000 words and no more than 15 figures and/or tables. The format should further be: 1) Abstract, 2) Introduction, 3) Materials and Methods, 4) Results, 5) Discussion.

https://www.frontiersin.org/journals/psychology#article-types

Templates for the original research is used in the current article. The default language in Frontiers is American English. The entire document should be singled-spaced and contain page and line numbers. Tables are placed at the end of the article. The Harvard Reference Style (Author – date) are to be used in Frontiers in Psychology. The headline "Author Contribution" will not be written until the actual journal submission. Further information about the author guidelines is found in the link below:

https://www.frontiersin.org/about/author-guidelines

Appendix III: The journal article manuscript

The article is presented in full length at next page.

1 **The Association between Sharing Something Difficult on Social Media and Mental Well-being**
2 **Among Adolescents**

3 **Bjarte B. Kysnes[1]**

4 [1]University of Bergen, Department of Health Promotion and Development, Bergen**,** Norway

5 *** Correspondence:**
6 Corresponding Author – <mark>To be announced at journal submission</mark>

7
8 Word count: 5513, Tables: 4

9 **Abstract**

10 Social media use among adolescents is part of everyday life. Concerns about the potential negative
11 effects of social media use on mental health and well-being has been raised over the last decade.
12 Potential positive effects of social media use have to lesser extent been explored in previous research.
13 However, some studies have found associations between social support and well-being on social
14 media. Self-disclosing negative thoughts and feelings on social media might provide social support
15 and affect well-being. The current study aimed to explore adolescents' experiences with sharing
16 something difficult on social media and the association with well-being. The survey data in this
17 cross-sectional study were collected from a sample of 2023 adolescents from senior high schools
18 (mean age 17.4, 55.6 % females). Mental well-being was measured using the Warwick-Edinburgh
19 Mental Well-being scale (WEMWBS). Multiple linear regression adjusting for age, gender, social
20 media frequency/duration use, and number of close friends was used to explore the association of
21 sharing something difficult on social media and mental well-being. The findings indicated that
22 sharing something difficult on social media, either with a few friends/family members or in public
23 post, was associated with lower well-being. Perceived social support (easier to talk about, received
24 support, positive experience) after sharing something difficult were associated with higher well-
25 being. Females reported sharing significantly more than boys, but no interaction effect of gender
26 were found in the associations between private or public sharing and well-being. The results might
27 indicate that social media serve as a supportive environment for adolescents. Future research may
28 want to explore how often adolescents seek social support by sharing something difficult, and what
29 their goals and motivations are for self-disclosing, as well as differences in private and public
30 sharing.

31 **Keywords: adolescence, sharing, self-disclosure, well-being, social media, social support.**

32 **1   Introduction**

33 Social media is defined as "mobile and web-based technologies that create highly interactive
34 platforms via which individuals and communities share, co-create, discuss, and modify user-
35 generated content" (Kietzmann et al., 2011). Social media appears to be fully integrated in
36 adolescents' life. On average, 77 % of 15-16-year-olds in 19 EU countries reported visiting social
37 network sites every day (Smahel et al., 2020). Time spent on social media has increased gradually
38 over the last decade, with 88 % of adolescent girls and 70 % of adolescent boys at Norwegian senior
39 high school spending more than 1 hour each day in 2021 (Bakken, 2021). Further, a recent cross-

40 national study including 29 countries showed that an average of 34 % of the adolescents reported
41 using social media "almost all the time throughout the day" (Boer et al., 2020). The rapid increase in
42 social media use among adolescents' has caused concerns about potential negative impacts, as
43 evident by the increasing number of research reviews on social media and adolescents' mental health
44 and well-being (Boer et al., 2020, Schønning et al., 2020, Valkenburg et al., 2022, Best et al., 2014,
45 Orben, 2020, Webster et al., 2021, Keles et al., 2019, Odgers and Jensen, 2020). Valkenburg et al.
46 (2022) points at evidence suggesting that social media use is weakly associated with higher levels of
47 both mental illness and well-being. This seeming contradiction led the authors to argue that the two
48 outcome measures of illness and well-being should be examined separately. The term well-being
49 describes a state of positive physical and mental health in health promotion literature, and illustrates a
50 shift in focus from only being concerned about the presence and absence of mental illness to also
51 include the presence or absence of mental well-being (Keyes, 2013). Moreover, several researchers
52 proposes that social interactions and the quality of social media use may be more strongly associated
53 with mental health and well-being than the time spent or quantity of social media use (Orben, 2020,
54 Schønning et al., 2020, Valkenburg et al., 2022, Liu et al., 2022). However, research investigating the
55 well-being of adolescent and specific interactions of social media use, and potential positive aspects
56 has been limited (Schønning et al., 2020). Such a focus might be even more relevant for adolescence
57 as it is viewed as an important time for acquiring emotional, social, economic, cognitive, and
58 physical resources (Patton et al., 2016). Those resources could protect individuals against adverse
59 health outcomes and promote health later on (Morgan and Ziglio, 2010).

60 Social support is an example of such a human resource, and extensive literature and research exist in
61 which social support is associated with well-being (Cohen and Wills, 1985, Thoits, 2011, Barrera,
62 1986, Chu et al., 2010). Perceived social support has especially been prominent in research, showing
63 positive associations with well-being and health (Thoits, 2011, Taylor, 2007, Chu et al., 2010,
64 Barrera, 1986, Cohen and Wills, 1985). A recent longitudinal study showed positive associations
65 between adolescents' perceived social support, especially from friends, and well-being outcomes in
66 early adulthood (Jakobsen et al., 2022). Perceived social support means that the individual perceives
67 that support would be available if needed (Barrera, 1986). In the context of social media several
68 reviews and studies have indicated that social media provides feedback that could promote perceived
69 social support (Kross et al., 2021, Best et al., 2014) and contribute as a positive factor to adolescents'
70 mental health and well-being (Webster et al., 2021, Best et al., 2014, Quinn, 2019). The positive
71 association between social support and well-being has been described as the main effect model, as
72 first suggested by Cohen and Wills (1985). The relational regulation theory has later been introduced,
73 explaining the beneficial effects between perceived social support and mental health (Lakey and
74 Orehek, 2011). The relational regulation, and perceived support, is thought to be reflected in "desired
75 affect, action, or thought that results from interaction with or thinking about specific other people"
76 (Lakey and Orehek, 2011). Thus, the feedback and interactions provided through social media and
77 the perception of social support might be reflected in this theory.

78 An important aspect of interaction is when a person shares feelings and difficulties about themselves
79 to others. Self-disclosure has been defined as "the intentional communication of information about
80 the self to another person or group of people" (Masur, 2019). It has been argued that some of the
81 main benefits of disclosing personal upsetting events or problems are the reactions from those shared
82 to and that the disclosure may lead to social support (Derlega et al., 1993). Some researchers have
83 also used "social support seeking" as a similar term, which implies to a greater degree a way of
84 coping with life stressors and difficulties (Frison and Eggermont, 2015). Different purposes of social
85 support seeking and self-disclosure have been argued. Self-disclosure may have different relationship
86 goals, such as relational development or social validation (Derlega et al., 1993). Relational

87   development by seeking to increase relational intimacy and closeness to another individual might
88   drive the disclosure (Luo and Hancock, 2020). Social validation reflects the feedback received by
89   others about thoughts and feelings that may motivate self-disclosure (Derlega et al., 1993).
90   Furthermore, in self-disclosure theory, it is common to distinguish between *dyadic* or small group
91   interactions, and *one-to-many* communication (Masur, 2019). The one-to-many communication may
92   seem even more relevant at present as social media has made it more effortless to share information
93   through for example public status updates or stories.

94   With adolescents spending more time and life on social media, they may also be more likely to share
95   personal feelings and difficulties (self-disclose) with others through those channels. For example, in
96   2018, 68 % of adolescents reported that social media made them feel that people supported them
97   through difficult times (Pew Research Center, 2018b), implying they might have shared something
98   difficult beforehand. Moreover, in a recent qualitative study adolescents saw social media as having a
99   positive influence because it allowed them to seek social support from friends, and some noted that it
100   was easier to talk about difficulties through social media (Hjetland et al., 2021). In addition, some
101   studies have suggested that sharing personal feelings and concerns and intimate information are more
102   frequent in private messaging compared to public status updates (Masur and Scharkow, 2016,
103   Bazarova and Choi, 2014). Yet, these studies focused on university students and the association with
104   mental well-being were not assessed. Correlational studies on mental health and online self-
105   disclosure/social support seeking, however, have been inconsistent. Some scholars have found that
106   social support seeking is associated with an increase in depressed mood (Frison and Eggermont,
107   2015), others found self-disclosure to increase online social well-being (Huang, 2016), while some
108   argue that self-disclosure assumably have no direct effect on well-being (Lee et al., 2013, Zhang,
109   2017). Nevertheless, the same studies reported that both seeking social support (Frison and
110   Eggermont, 2015) and self-disclosure (Lee et al., 2013, Huang, 2016, Zhang, 2017) on social media
111   has been positively associated with social support. Furthermore, the perception of received social
112   support through Facebook has shown to be associated with a decrease in depressed mood (Frison and
113   Eggermont, 2015), and increased well-being (Lee et al., 2013, Zhang, 2017). This process is
114   proposed in a theoretical framework by Luo and Hancock (2020), suggesting that self-disclosure in
115   social media can affect psychological well-being through various mechanism, such as perceived
116   social support.

117   The majority of the abovementioned studies focused on university students. One of the studies did
118   include adolescents, but not well-being as an outcome measure (Frison and Eggermont, 2015).
119   Further, most of the research have been limited to exploring Facebook as the social media platform
120   (Frison and Eggermont, 2015, Zhang, 2017, Frison and Eggermont, 2016, Gilmour et al., 2020,
121   Huang, 2016, Lee et al., 2013). Hence, rather than examining Facebook use, social media use in
122   general could interest research as social media platforms like YouTube, Instagram, Snapchat and
123   TikTok has been reported more popular than Facebook among adolescents (Pew Research Center,
124   2018a, Medietilsynet, 2020). Furthermore, in the early research on self-disclosure and gender
125   differences, it was suggested that males tend to disclose personal information or concerns less
126   compared to females (Jourard, 1971, Derlega et al., 1981). More recent research indicated the same
127   results, both for offline and online self-disclosure among adolescents (Valkenburg et al., 2011).
128   However, investigating gender differences in social media and associations to well-being have been
129   lacking in research literature (Schønning et al., 2020).

130   Against this backdrop the present study aimed to explore whether:

131   • sharing something difficult on social media is associated with well-being among adolescents

132 - perceived social support after sharing something difficult on social media is associated with
133   well-being among adolescents
134 - there are gender differences in the associations between sharing something difficult on social
135   media and well-being

136 **2   Materials and methods**

137 This cross-sectional study was based on data from a survey conducted in the autumn of 2020. The
138 survey was a collaboration between the Norwegian Institute of Public Health, Bergen municipality,
139 and Vestland County Council. The study used a web-based questionnaire, and the participants
140 completed the questionnaires in the schools during school hours with teachers present.

141 **2.1   Participants**

142 Invitations to participate were extended to all senior high schools in Bergen Municipality. In the 12
143 schools (out of 14) that accepted the invitation, all pupils aged 16 or more were invited ($n = 3959$), of
144 which 2116 (53.4 %) pupils accepted to participate. Those who did not reply to the gender and age
145 questions in the survey were excluded from the analysis. Those who indicated non-binary gender
146 were excluded due to very low numbers and privacy concerns. This resulted in a final sample of 2023
147 (51.1 %), of which 899 (44.4%) were males, and 1124 (55.6 %) were females. The age range was 16-
148 21, and the average age was 17.3 years ($SD = 0.9$) for males and 17.4 years ($SD = 0.9$) for females
149 (Table 1).

150 **2.2   Instruments**

151 **2.2.1 Measure of mental well-being**

152 The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) was used to assess the level of
153 mental well-being. This instrument aims at measuring well-being, conceptualized broadly to include
154 affective-emotional aspects, psychological functioning, and cognitive-evaluative dimensions
155 (Tennant et al., 2007). The WEMWBS consists of 14 items addressing positive aspects of mental
156 health, and the participants were asked to indicate how much each statement pertained to them based
157 on the previous two weeks. They responded to the statements using a 5-point Likert scale (1= none of
158 the time, 2 = rarely, 3 = some of the time, 4 = often, 5 = all of the time) (Tennant et al., 2007). Some
159 examples of the statements are: "I've been feeling optimistic about the future", "I've been dealing
160 with problems well", and "I've been feeling loved." A sum score was made for WEMWBS, with a
161 minimum score of 14 and a maximum score of 70. The higher the score, the higher level of mental
162 well-being (Tennant et al., 2007). A validated Norwegian version of WEMWBS was used in the
163 present study (Smith et al., 2017). Cronbach's α was 0.93 in the current study, indicating a high
164 internal consistency.

165 **2.2.2 Sharing and Perceived Social Support**

166 Questions related to sharing something difficult on social media and perceived social support were
167 based on an initial qualitative study using focus group interviews among adolescents in senior high
168 school (Hjetland et al., 2021). Examining participants' experiences in sharing something difficult on
169 social media included two introductory questions; "Have you ever shared something difficult through
170 a story, a post, or similar, which was public or visible to others than your closest friends?" and "Have
171 you ever shared something difficult with one or a few friends/family members through social
172 media?". Responses to public sharing and private sharing were recoded from 1 = "yes" and 2 = "no"
173 to 1 = "yes" and 0 = "no", making it easier interpreting the results. Those responding "yes" on one or

174   both questions were presented with three statements: 1) "It was easier to talk about the difficulties in
175   real life afterwards" 2) "I received support from friends and people I know afterwards" (public), "I
176   received support from those I shared it with afterwards" (private), 3) "It was a positive experience to
177   share the difficult issue on social media". The participants responded to the statements on a Likert
178   scale ranging from 1 = "not at all" to 5 = "to a great extent". Responses were recoded to three
179   alternatives, 1-2 = "not at all/to a little extent", 3 = "to some extent", and 4-5 = "A lot/very much".

180   **2.2.3 Control variables**

181   Based on the existing literature, some control variables have been included due to potential influence
182   on well-being and social support. Frequency/duration of social media use (Boer et al., 2020,
183   Schønning et al., 2020), gender (Tifferet, 2020, Zhang, 2017, Liu et al., 2018), age (Liu et al., 2018),
184   and number of friends (Helliwell and Huang, 2013) have been associated with well-being and/or
185   social support. The respondents were asked how often they use social media. The response
186   alternatives were "Almost never", "Several times a month, but rarer than every week", "1-2 times a
187   week", "3-4 times a week", "5-6 times a week", "Every day", "Several times a day" and "Almost all
188   the time". Responses were recoded to 1 = "Less than every day," 2 = "Every day", 3 = "Several times
189   a day" and 4 = "Almost all the time". In addition, the respondents were asked about the duration of
190   social media use: "On the days that you use social media, approximately, how much time do you
191   spend using them?" Respondents answered on a range from 1 = "Less than 30 minutes" to 7 = "More
192   than 5 hours" "(Skogen and Hjetland, 2021). Values 2-3 hours and 3-4 hours had to be collapsed due
193   to errors in answer options in the electronic survey, making a revised range from 1 to 6.

194   Age and gender were included as control variables. Age categories were 16, 17, 18, 19, 20, and 21
195   years. Response alternatives on gender question were "girl", "boy" and "non-biary". Finally, the
196   respondents were asked about number of close friends, with the alternatives 1 = "none", 2 = "one",
197   and 3 = "two or more".

198   **2.3   Ethical considerations**

199   The data collection was conducted according to the guidelines of the Declaration of Helsinki and was
200   approved by the Regional Ethics Committee (REK) in Norway (REK #65611). The adolescents
201   invited were 16 years or older and were able to consent to participate on their own behalf.

202   **2.4   Data analyses**

203   Comparing gender with WEMWBS, and age, was done using independent t-test. The comparison of
204   gender and sharing something difficult, either in a public post or with a few and close friends, was
205   analysed by using the non-parametric statistics technique Chi-square test for independence. Chi-
206   square test for independence were also used comparing gender with number of close friends,
207   frequency use, and duration use of social media. Assumptions were checked for each analysis,
208   including minimum expected cell frequency for Chi-square tests, normal distribution, and
209   homogeneity of variance in t-tests (Levene's test for equality of variance).

210   Correlational analyses were done to check relationships between variables. Bivariate linear
211   regression with WEMWBS as the dependent variable was used to investigate relationships between
212   the variables public sharing, and private sharing, and their three related statements. In the multiple
213   linear regression analysis, the control variables were included. The dependent variable WEMWBS
214   was also Z-scored to ease interpretation of the association strength. Interaction analysis was used to
215   examine a potential gender moderation in the associations investigated. Assumptions were checked

216   for each analysis, including normality, linearity, homoscedasticity, and examining residuals. No
217   major deviations or violations were found. The IBM SPSS Windows version 26 software was used
218   for data analysis.

219   **2.5   Missing values**

220   Initial analyses included checking distribution of errors or missing values in the data set. The
221   WEMWBS had some missing values (from 0.4 to 2.8 % for the individual items). Five participants
222   had 100 % missing values on the WEMWBS, while 111 had one or more missing items (of which 79
223   % were missing one item). The total score for the WEMWBS was calculated for those with <100 %
224   missing items by summarizing their scores on all answered items, divided by the number of answered
225   items, and multiplied by 14.

226   The study had a high number of participants ($N = 2023$), which means that the variable probably
227   would not be affected to a great degree by the missing values (Tabachnick and Fidell, 2013). To
228   maximise the number of respondents in each regression model, pairwise deletion was employed.

229   **3   Results**

230   In total, 89.3 % of the respondents used social media for more than 1 hour per day (Table 1).
231   Significant gender differences were shown in frequency use, with 93.2 % of the females reporting to
232   use social media for more than 1 hour per day, compared to 84.6 % of males. Males reported a
233   significantly higher level of well-being than females ($p<0.001$). For public sharing, 9.0 % of females
234   and 6.1 % of males reported this activity ($p = 0.019$), while 37.6 % of females had shared something
235   difficult in private, compared to 23.6 % of the males ($p < 0.001$) (Table 1).

236   The response rate for each statement related to private and public sharing is presented in Table 2. For
237   both public and private sharing, the majority of the respondents indicated that they, to a "great
238   extent," received support after sharing (66.2% and 78.2%). For public sharing, 26.0 % did not
239   experience it easier to talk about difficulties in real life afterwards, compared to 13.3 % for private
240   sharing.

241   The results from the regression analysis show that those who had shared something difficult in public
242   reported lower well-being than those who had never shared something difficult in public (B (stand.) =
243   -0.44, $p < 0.001$) (Table 3). For those who confirmed public sharing, reporting higher levels of
244   receiving support from friends and people they know after sharing was associated with increased
245   well-being (B (stand.) = 0.49, $p < 0.001$). This was the highest point estimate of the three related
246   statements to public sharing. Also, private sharing was associated with lower well-being (B (stand.) =
247   -0.20, $p < 0.001$). For those who had shared something difficult in private, higher scores on receiving
248   support were associated with higher well-being (B (stand) = 0.51, $p < 0.001$). All variables show
249   significant associations ($p < 0.05$ or less).

250   Table 4 shows the results from the multiple regressions analyses. In the fully adjusted analyses, the
251   effect size was small to medium for public sharing (B (stand.) = -0.36) and small effect size for
252   private sharing (B (stand.) = -0.13). Compared to the unadjusted estimates, the regression
253   coefficients' differences are not sizeable. The most considerable differences were seen when
254   adjusting for gender (Table 4). The interaction between gender and public/private sharing was
255   therefore investigated. The interaction analyses indicated no interaction effect for gender on the
256   associations between public sharing ($p=0.839$ for interaction term) and private sharing ($p=0.296$), and
257   WEMWBS.

258   **4   Discussion**

259   The current study aimed to explore adolescents' experiences with sharing something difficult through
260   social media and its relation to well-being, as previous research to our knowledge is modest. The
261   results show that having shared something difficult on social media, either with one or a few friends
262   or family members or in a public post, was associated with lower well-being among adolescents.
263   Moreover, adjusting for all covariates did not change the association found between sharing and well-
264   being. Among those who had shared something difficult, higher scores on each of the three
265   statements of social support (easier to talk about, receiving social support, and sharing as a positive
266   experience) were associated with significantly higher well-being. There were significant gender
267   differences, with girls sharing more than boys, but no gender interaction effect was found in the
268   associations between public or private sharing and well-being.

269   Among those who had shared privately, more than three out of four reported having received social
270   support from those shared it with to a great extent. Two out of three reported to have received support
271   to a great extent from friends and people they know when sharing publicly. Furthermore, of the three
272   statements of social support the highest point estimate was found for the second statement regarding
273   received social support, showing medium effect sizes on well-being for public and private sharing.
274   However, finding it easier to talk about, receiving support and viewing it as a positive experience
275   after sharing something difficult were all associated with a higher degree of well-being across public
276   and private sharing. The relationship agree with previous studies and reviews, showing that perceived
277   social support on social media is associated with higher well-being (Kross et al., 2021, Webster et al.,
278   2021, Best et al., 2014, Huang, 2016), and a reduction in depressed mood among adolescents (Frison
279   and Eggermont, 2015). Unsurprisingly, the findings in the present study align with research on
280   perceived social support in offline contexts, which has been positively associated with well-being
281   (Chu et al., 2010, Taylor, 2007, Thoits, 2011). Thus, social support through social media may serve
282   as an asset with the ability to protect adolescents against possible negative health outcomes and/or to
283   promote health. Moreover, these findings imply that sharing something difficult, or self-disclosure, is
284   not enough to enhance well-being. Self-disclosure involves revealing the self to another person or
285   group. Reaction and support must follow the disclosure, and the main benefits of self-disclosure are
286   suggested to be the recipients' (another person or group) reactions and the social support
287   accompanying (Derlega et al., 1993). Thus, the findings supports the theoretical framework on self-
288   disclosure in social media and well-being presented by Luo and Hancock (2020), stating that
289   perceived social support through self-disclosure positively effect psychological well-being.

290   In addition to the mode of sharing on social media, it is likely that the perceived social support will
291   depend on the target of one's sharing and/or who provides social support. The present study did not
292   examine differences in perceived support from parents, friends, teachers, and classmates. It has been
293   suggested that adolescents might perceive friend support as more prominent than parent support
294   (Bokhorst et al., 2010), and perceived support from friends in adolescence has also been reported as
295   most important for positive mental health in early adulthood (Jakobsen et al., 2022). In that respect,
296   one might conduct research that could illuminate differences in social support sources on social
297   media among adolescents.

298   The findings in the current study uncovered that sharing something difficult is associated with lower
299   well-being, with public sharing showing a medium effect size and private sharing a small effect size.
300   The results align with a previous finding showing that social support seeking on Facebook was
301   associated with an increase in depressed mood among adolescents (Frison and Eggermont, 2015).

302 The current finding may reflect that those who had never shared something difficult through social
303 media also had fewer difficulties to share, and hence had higher well-being.

304 About four times as many adolescents in the present study reported having shared something difficult
305 with one or a few friends/family members, compared to public sharing. Similar results were found in
306 a study among adults, in which people shared information more often in private messages than status
307 updates (Masur and Scharkow, 2016). Moreover, various research has reported that personal feelings
308 and intimate information are rarely disclosed in status updates or wall posts (Masur and Scharkow,
309 2016, Bazarova and Choi, 2014). This may indicate differences in responses people receive in public
310 and private sharing. Some suggest disclosing negative thoughts and feelings in public status updates
311 may receive fewer responses than via private messages (Ziegele and Reinecke, 2017). This might
312 have been reflected in the present study, where half of the respondents reported that it was easier to
313 talk about in real life after sharing the difficult in private to a great extent. At the same time, only one
314 third reported the same after publicly sharing their difficulties.

315 Different goals or motivations of self-disclosure have been suggested between public (one-to-many)
316 and private (dyadic) communication. One study indicated that self-disclosure goals of private
317 messages associate with relational development (Bazarova and Choi, 2014). The study further
318 suggest that public sharing or disclosure in a status update on Facebook might be motivated by social
319 validation (Bazarova and Choi, 2014). The social validation can be understood as receiving feedback
320 from others about feelings shared. Sharing difficulties and receiving social validation might
321 correspond to the relational regulation theory proposed by Lakey and Orehek (2011). They claim the
322 broader the diversity in potential relationships available; effective regulation may be more likely. In
323 that respect, the one-to-many communication through social media might have the potential for vast
324 and diverse relationship development, and social validation, and may increase perceived social
325 support. Further, investigating differences in self-disclosure and relationship goals might interest
326 future research, comparing social media's dyadic and one-to-many disclosure motivations.

327 The findings in the current study suggest that females shared difficulties significantly more than
328 males, both in public and private. This is in line with previous research on self-disclosure and gender
329 differences in which males tend to be low in disclosing personal information or concerns compared
330 to females (Jourard, 1971, Derlega et al., 1981, Valkenburg et al., 2011). In addition, the current
331 study showed that girls spent a significantly higher proportion of time on social media, both in
332 frequency and in duration. However, adjusting for social media frequency and duration use did not
333 change the association between well-being and public/private sharing. Moreover, it has been
334 suggested that females' increased activity on social media might explain their higher level of
335 perceived social support than males (Tifferet, 2020). With the notion that a reaction or support should
336 follow self-disclosure, one might have expected girls to report higher levels of perceived social
337 support and more increased well-being than boys. However, with the results in the current study
338 showing lower well-being among girls, one might speculate there being a gender interaction effect in
339 public and private sharing and well-being. Some change was seen when adjusted for gender, but the
340 interaction analyses conducted did not indicate an interaction effect. Interestingly, a meta-analysis by
341 Liu et al. (2018) indicated that females, older students, and Asians received more social support than
342 males, younger students, and Europeans and Americans. Therefore, generalizing the results in present
343 study should be taken with care, as cultural differences could have an impact on associations.

344 The current study investigated sharing in social media and did not differentiate between platforms
345 like Instagram, Facebook, TikTok, Snapchat, etc. Previous studies have mainly focused on Facebook
346 (Frison and Eggermont, 2015, Zhang, 2017, Frison and Eggermont, 2016, Gilmour et al., 2020,

347   Huang, 2016, Lee et al., 2013), which by some has led to concerns about generalizability (Stoycheff
348   et al., 2017). These concerns could be valid, as it has been noted that certain types of social support
349   seeking might be more frequent in some social media platforms than others (Hayes et al., 2016).
350   With that in mind, future research should further explore which social media platforms are being
351   used to share something difficult. This might guide researchers and health promotion workers in
352   finding the most optimal way of seeking social support through social media.

353   **4.1   Implications**

354   The current findings indicate that social media can serve as an arena for receiving social support
355   among adolescents and that perceived social support on social media is associated with higher well-
356   being. Sharing difficulties and receiving social support thus represents aspects of social media use
357   that potentially could have a positive impact on adolescents' well-being. In this manner, social media
358   might be an important social arena for adolescents where they can share difficulties that they
359   otherwise would not have done, or which they find difficult to share face-to-face. Sharing through
360   social media could potentially elicit immediate responses and social support digitally, and
361   subsequently one might receive social support in a face-to-face setting. Moreover, one might
362   speculate that some share information on social media they otherwise would have kept for
363   themselves. Future research should try to facilitate greater knowledge on the best possible ways of
364   sharing, and thereby looking to optimize the positive aspects of sharing and to reduce the negative
365   aspects. For instance, future research might examine how often adolescents are sharing something
366   difficult and what their motivations are for sharing, and how this relates to social support and well-
367   being. Further, research might also investigate differences in perceived social support from friends,
368   family, or potential distant others on social media. Differences has been reported in previous research
369   in offline settings (Bokhorst et al., 2010, Jakobsen et al., 2022). In addition, different experiences
370   among adolescents in private (dyadic) and public (one-to-many) self-disclosure on social media
371   might interest future research. At last, more knowledge on differences in sharing something difficult
372   on social media versus face-to-face interactions and the following perceived social support should be
373   of interest. This might contribute to find and propose a possible pathway for adolescents to seek
374   social support, and to encourage others to give support.

375   **4.2   Strengths and limitations**

376   A strength of the current study was the investigation of specific aspects and interactions in social
377   media use and its relation to well-being, which has been requested by scholars. Sharing something
378   difficult, and to perceive social support are some of probably numerous aspects influencing the
379   associations between use of social media and well-being. Furthermore, this study used a validated
380   scale on well-being focusing on positive mental health which have been missing in the literature on
381   self-disclosure and social support among adolescents and social media use.

382   The present study has some limitations. First, the cross-sectional approach prevents us from drawing
383   conclusions about causality. Sharing something difficult may be associated with lower well-being,
384   but those who share something difficult might have initial struggles and hence report lower well-
385   being than those who have not shared difficulties. The same accounts for the social support measures
386   of finding it easier to talk about, received support and positive experience and the association with
387   higher well-being in present study. The direction of the associations and causality is uncertain.
388   Longitudinal studies on the topic are needed to gauge the causal relationship between sharing, social
389   support, and mental well-being. Second, respondents where to subjectively interpret what sharing
390   something difficult would imply. In a previous study, researchers measured specific disclosure types
391   on social media, such as personal feelings, fears and concerns, relationship details and more, as well

392   as disclosure frequency (Masur and Scharkow, 2016). This may serve as a more objective measure.
393   However, a similar measure as in the present study was used by Frison and Eggermont (2015) in their
394   study on social support seeking on Facebook. The items on social support seeking started with "If
395   you are feeling down or in a difficult situation.", which refers to a subjective assessment. Future
396   research might benefit from investigating both objective and subjective measures of self-disclosure.

397   Thirdly, the frequency of sharing was not investigated. This could be of interest, as one study has
398   shown that frequently talking about oneself on Facebook were negatively associated with perceived
399   social support among young adults (Zhang, 2017). Although not fully transferable, a similar
400   reference was made by Cozby (1973) for offline settings. He proposed that persons either high or low
401   in disclosure to almost anyone may associate with negative mental health, when compared to those
402   characterized by high dyadic (face-to-face) disclosure and medium one-to-many (face-to-face)
403   dislosure. However, sharing through social media with a potential of world-wide audience might not
404   reflect the original theory of one-to-many communication.

405   Fourth, we used non-validated questions related to perceived social support. The results could be less
406   comparable to other similar studies using validated measures of social support, i.e., Medical Outcome
407   Study (MOS) social support scale (Sherbourne and Stewart, 1991) and the MSPSS (Zimet et al.,
408   1988). However, the face validity was strengthened by initial focus groups discussions and the
409   resource group of adolescents (Hjetland et al., 2021). Further, the questions are context specific and
410   related social media interaction.

411   Finally, the survey was conducted during the Covid-19 pandemic. This meant that adolescents were
412   restricted from physical meetings. Adolescents and the society were forced to use mobile and data
413   technology, assumably to a greater extent than before the pandemic. One may speculate that the
414   amount of sharing something difficult through social media could have shown different results
415   prior/post-pandemic. This is worth noting as some studies has shown that real-life social support, and
416   not social support through social media, are associated with increased well-being (Meshi and
417   Ellithorpe, 2021, Trepte et al., 2015). Not being able to meet in-person during the pandemic, might
418   have changed this dynamic in offline and online social support.

419   **5   Conclusions**

420   The findings in current study extend prior research on associations between perceived social support
421   and well-being among adolescents, by looking at the action of sharing something difficult on social
422   media. The results indicated that sharing something difficult on social media was associated with
423   lower well-being. However, perceived support after sharing was associated with higher well-being.
424   Further, girls reported to share something difficult significantly more than boys. The findings
425   indicate that social media may provide as a supportive environment for adolescents, and that
426   receiving support through social media could have a potential positive effect on adolescents' well-
427   being. Future research may want to seek greater knowledge on several aspect of social media use and
428   sharing, such as frequency of sharing and motivations for sharing. Further, different experiences of
429   private and public sharing on social media might be of interest, as well as differences in sharing
430   difficulties and social support in social media versus face-to-face interactions.

431   **6   Conflict of interest**

432   No conflict of interest is declared by the author.

433   **7   Author contributions**

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616 **11   Tables**

617 **Table 1**

618   Descriptive statistics comparing gender for both control and main variables

Variables	[1]Males, N = 899	[1]Females, N = 1124	[1]Total, N = 2023	[2]p-value
Age	17.3 (0.9)	17.4 (0.9)	17.4 (0.85)	=0.13
Number of close friends				=0.29
None	25 (2.8 %)	20 (1.8 %)	45 (2.2 %)	
One	56 (6.3 %)	67 (6.0 %)	123 (6.1 %)	
Two or more	813 (90.9 %)	1036 (92.3%)	1849 (91.7 %)	
Frequency use of social media				<0.001
Rarer than every day	37 (4.2 %)	16 (1.4 %)	53 (2.6 %)	
Every day	189 (21.3 %)	174 (15.5 %)	363 (18.1 %)	
Several times a day	439 (49.5 %)	582 (51.9 %)	1021 (50.9 %)	
Almost all the time	221 (24.9 %)	349 (31.1 %)	570 (28.4 %)	
Duration of social media use				<0.001
Less than 30 minutes	35 (4.0 %)	11 (1.0 %)	46 (2.3 %)	
30 minutes – 1 hour	101 (11.5 %)	65 (5.8 %)	166 (8.3 %)	
1-2 hours	184 (20.9 %)	170 (15.2 %)	354 (17.7 %)	
2-4 hours*	326 (37.0 %)	402 (36.0 %)	728 (36.4 %)	
4-5 hours	134 (15.2 %)	284 (25.4 %)	418 (20.9 %)	
More than 5 hours	101 (11.5 %)	185 (16.6 %)	286 (14.3 %)	
Public sharing				=0.019
Yes	52 (6.1 %)	99 (9.0 %)	151 (7.7 %)	
No	803 (93.9 %)	996 (91.0 %)	1799 (92.3 %)	
Private sharing				<0.001
Yes	202 (23.6 %)	409 (37.6 %)	611 (31.4 %)	
No	653 (76.4 %)	680 (62.4 %)	1333 (68.6 %)	
Total score WEMWBS	51.8 (10.0)	46,2 (9.4)	48.7 (10.0)	<0.001

619   *[1]Mean (SD); n (%) [2]Independent t-test; Pearson's Chi-squared test *Values 2-3 hours and 3-4 hours*
620   *has been collapsed due to errors in answer options in the electronic survey.*

621   **Table 2**

622   Frequency distribution of responses on the three statements after answering "Yes" on the two
623   questions about sharing something difficult

Variables	Not at all	Some extent	Great extent

	n (%)	n (%)	n (%)
Public sharing (N = 151)			
It was easier to talk about the difficulties in real life afterwards	38 (26.0 %)	60 (41.1 %)	48 (32.9 %)
I received support from friends and people I know afterwards	12 (8.3 %)	37 (25.5 %)	96 (66.2 %)
It was a positive experience to share the difficult issue on social media	32 (21.8 %)	56 (38.1 %)	59 (40.1 %)
Private sharing (N = 611)			
It was easier to talk about the difficulties in real life afterwards	80 (13.3 %)	210 (35.0 %)	310 (51.7 %)
I received support from those I shared it with afterwards	24 (4.0 %)	107 (17.8 %)	471 (78.2 %)
It was a positive experience to share the difficult issue on social media	70 (11.7 %)	195 (32.7 %)	331 (55.5 %)

Table 3

Results from bivariate linear regression analyses for public and private sharing and the related statements. WEMWBS is the dependent variable.

Variables	B (stand.)	B	CI 95 %	p-value
Public sharing	-0.44	-4.38	-6.02, -2.73	<0.001
It was easier to talk about the difficulties in real life afterwards	0.30	2.98	1.04, 4.92	=0.003
I received support from friends and people I know afterwards	0.49	4.87	2.59, 7.15	<0.001
It was a positive experience to share the difficult issue on social media	0.26	2.63	0.67, 4.58	=0.009
Private sharing	-0.20	-2.00	-2.95, -1.05	<0.001

It was easier to talk about the difficulties in real life afterwards	0.15	1.47	0.42, 2.53	=0.006
I received support from those I shared it with afterwards	0.51	5.09	3.71, 6.47	<0.001
It was a positive experience to share the difficult issue on social media	0.23	2.27	1.20, 3.33	<0.001

627 *Note: B (stand.) was computed using a Z-scored (mean 0; standard deviation 1) dependent variable.*

628 **Table 4**

629 Results from multiple regression analyses adjusting for covariates. WEMWBS is the dependent
630 variable.

631

Variables	Public sharing				Private sharing			
	B (stand.)	**B**	**95% CI**	**p-value**	**B (stand.)**	**B**	**95% CI**	**p-value**
Unadjusted	-0.44	-4.38	-6.02, -2.73	<0.001	-0.20	-2.00	-2.95, -1.05	<0.001
Adjusted for:								
Age	-0.43	-4.35	-6.00, -2.71	<0.001	-0.20	-2.01	-2.96, -1.06	<0.001
Gender	-0.38	-3.80	-5.38, -2.23	<0.001	-0.11	-1.12	-2.04, -0.19	=0.018
Close friends	-0.40	-4.41	-6.02, -2.80	<0.001	-0.22	-2.25	-3.18, -1.32	<0.001
Frequency, SoMe use	-0.43	-4.31	-5.96, -2.67	<0.001	-0.19	-1.95	-2.91, -0.99	<0.001
Duration SoMe, use	-0.38	-3.84	-5.47, -2.20	<0.001	-0.17	-1.68	-2.63, -0.73	=0.001
Fully adjusted	-0.36	-3.57	-5.11, -2.02	<0.001	-0.13	-1.31	-2.22, -0.41	=0.005

632 *Note: B (stand.) was computed using a Z-scored (mean 0; standard deviation 1) dependent variable.*

633