

# **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.

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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 & Sørensen, 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 & Sørensen, 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 & Sørensen, 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 area 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 26<sup>th</sup>, 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 & Sørensen, 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 & Sørensen, 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 & Sørensen, 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 & Sørensen, 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 eksternt 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.