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SOCIAL MEDIA AND STRESS

A quantitative study of social media habits and stress in an adult population

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ABSTRACT

Background: Sick leave has increased in Sweden and a common cause is diagnoses related to stress, it is a major problem and a predictor for long term sickness. Stress affects both the individual as well as the society. Social media usage decreases with time and previous research has shown an association with both positive and negative outcomes.

Aim: The aim of the present thesis was to evaluate social media usage in association with stress, and whether there are gender differences in such associations. Moreover, if addictive tendencies on social media are associated with stress, and whether the determinants for intention affect social media usage.

Method: A quantitative method with a cross sectional design was used. The data was collected through a random selection and included 300 participants, of which 49,3 % were women and 50,7 % men.

Result: Social media usage were associated with perceived stress levels among both men and women, the strongest association was found among women. Addictive tendencies of social media usage were associated with an increased probability of perceived stress. Attitudes and self-control were associated with an increased probability of addictive tendencies of social media usage, whereas subjective norms were not associated with addictive tendencies of social media usage.

Conclusions: Associations between social media usage and perceived stress levels existed, increased social media usage indicated increased levels of perceived stress, such association was also found depending on gender, and women seemed to be more vulnerable. Individuals with addictive tendencies of social media usage had an increased probability to perceived stress, and an association was found between likes, more than five memberships on social media, and addictive tendencies of social media usage.

Key words: *Addictive behaviour, public health, social media, stress, quantitative method*

CONTENTS

1 INTRODUCTION

Sick leave has increased in Sweden and a common cause is diagnoses related to stress. Individuals are exposed to stress every day, and recovery is needed to cope with stress. Moreover, it is a risk factor for health among individuals and strategies to manage the exposure are required on an individual and community level. Furthermore, this can lead to consequences such as depression and anxiety. It also contributes to cardiovascular diseases, muscular problems and can cause sleep problems. Except the individual, the health also affects family and friends, and it can also affect society. Sick leave is a cost, and the sequalae burden the health care and takes resources from the community.

Mental illness and stress are not a local problem, it can be considered a global public health problem. The World Health Organization (WHO) has formed strategies and has developed documents to decrease mental problems worldwide. However, depending on where individuals live, the exposure to risk factors is different. Therefore, in the perspective of public health, to monitor indicators is important to reduce ill-health. Consequently, if indicators and risk factors are monitored, it is possible to solve and prevent instead of managing problems afterwards, thus, social cost is decreased.

According to previous research, the use of social media was associated with stress. Social media usage has increased, and new behavioural patterns have been formed. In terms of public health, social media is not of interest unless the well-being of individuals is affected. Harmful usage of social media can be prevented, since it is a habit. Therefore, investigations in this subject are valuable in order to increase knowledge about hazardous habits that can potentially be prevented.

The topic of the present thesis is based on observation regarding a more frequent use of social media in the environment and the expectations from peers and family through such channels. The phenomenon of social media has been around for some time, and it can be considered that the social media has not been sufficiently explored. Moreover, social media constantly changing. Consequently, an interest has been created in order to contribute to an increasing understanding of the phenomenon of social media and its impact on the individual's well-being. During the first cycle, a similar study was conducted in adolescents. In the present thesis, adults were chosen, since adults may experience social media differently.

2 BACKGROUND

Health could be defined in different ways. WHO (1986) describes it as a state of physical, psychological and social well-being, and not only absence of illness and disability. WHO (2018) stated that health can be measured in a population, e.g. healthrecords can be used, another option is to ask individuals about their well-being. In order to follow trends in the population, indicators can be used, and mortality rate and life expectancy are indicators. In addition, physical and psychological factors are considered as indicators, besides them, there are more. Furthermore, WHO (2013) also claims that the health is determined by several factors, such as the fact that individual's well-being is affected by stress and can lead to physical and mental disorders. Mental illness is a general concept of psychological diagnosis, including disorders such as anxiety and depression, as well as other serious mental disorders, including suicide (WHO, 2013).

Mental illness is a global *health* problem, WHO (2013) has created an action plan for decreasing the mental illness worldwide. Mental disorders have increased, both the health sector and social sector needs to cooperate to counteract the spread of mental illness (WHO, 2013). WHO (2003) has formed strategies to reduce mental illness, by monitoring indicators instead of discovering disorders afterwards. Interventions on an individual level is not enough, therefore intervention is needed on a community level as well (WHO, 2003). Individuals are with different susceptibility to risks, and also have different amount of exposure. Some groups are more vulnerable, e.g. minorities and people living in poverty are more likely to end up with mental illness (WHO, 2013).

Several factors are considered to be a risk of mental illness, such as, socioeconomic status, financial factors, cultural factors, education and stress (WHO, 2013). In 2015, mental illness was the health problem that increased most in Sweden, common causes of sick leave were disorders related to mental illness, and the most common psychiatric diagnosis was stress (Folkhälsomyndigheten, 2016; Försäkringskassan, 2016). Everly & Lating (2002) argues that stress is considered as a significant challenge for workers in the field of public health. Since 1979, it has been classified as a burden in the US, and both the physical and psychological health are affected by stress. The extent has been epidemic, which indicated that it is a major challenge in the field of public health (Everly & Lating, 2002).

2.1 Stress

Everly & Lating (2002) stated that stress as a term was invented within health research in 1926, when scientists tried to combine several symptoms with similar outcomes. For example, less appetite, reduced muscle strength, elevated blood pressure and less ambition. Consequently, individuals who experienced these symptoms had been exposed to prolonged stress (Everly & Lating, 2002). Stress is not a disease, more like a reaction or response. Stress is the condition when the body experiences a challenge, and whether it is harmful depends on the capacity to manage the stressor (Bösch, 2013). Advantageously, stress increases the individual's performance and motivation, although it could be considered negative and it

depends on whether or not it is prolonged (Danielsson et al., 2012). Stress as a term is neither positive or negative, stress could be considered as positive when it is manageable (Bösch, 2013). Thus, individuals react differently to stress. Therefore, it is difficult to predict the outcome of stress. Also, the reaction can be physical or mental (Tsatsoulis & Fountoulakis, 2006; Flueckiger et al., 2016). Moreover, cultural differences are detected in perceived stress in individuals as well as norms in the society of stressful events. Therefore, individuals are more or less susceptible to stress, genetic differences also exist (Hildingh, et al., 2006; Grant, 2011; Hankin, et al., 2015).

Tsatsoulis & Fountoulakis (2006) argues that humans have experienced stress since the *Middle Ages*, the experience was the same as today, and the reaction was the same. In the *Middle Ages*, the challenge was to fight for survival, whereas this is not necessarily the case today. Furthermore, during the *Middle Ages*, combat worked as a strategy to deal with stress, the body expected a physical activity in a stressful situation. Therefore, stressors cause the body to go into battle mode. Since the reaction is the same today, the body expects a physical challenge (Tsatsoulis & Fountoulakis, 2006). Consequently, physical activity decreases stress (Danielsson et al., 2012). Almost every individual is exposed to stress every day and to some extent, the individual can affect the exposure and strategies are needed to avoid stress (Bartley & Roesch, 2011). Hence, *planning* can work as a strategy to reduce stress. For example, catching the bus or coping with deadlines can be potential stressors, and stress is not always manageable, since stress could appear when the individual does not have control (Tsatsoulis & Fountoulakis, 2006; Danielsson et al., 2012; Flueckiger et al., 2016). Being exposed to risk factors could be harmful, but, by managing them, they can act as protective factors (Bartley & Roesch, 2011).

2.2 Social media

Today, social media is considered a daily activity for many individuals (Davidsson & Thoresson, 2019). Kaplan & Haenlein (2010) mean that the development of social media has been rapid and extensive, both in terms of users and how the platforms are designed. Social media platforms are structured in different ways, with different purposes. The most common social media platforms are; *social networks sites* i.e. *Facebook* and *Instagram* which includes information profiles, and different methods to communicate and access information. *Blogs* are another type of social media and they are based on self-representation (Kaplan & Haenlein, 2010). Nair (2010) argues that individual with a blog have their own channel within a platform where messages and experiences can be disseminated. Vlogs can also be considered as a blog. However, the communication takes place through video instead of in the written word (Nair, 2010). Furthermore, Kaplan & Haenlein (2010) mean that a third concept is *social virtual world*, where users can create their own avatars, they can communicate and socialize without having any attributes from the physical world. Kietzmann, Silvestre, McCarthy & Pitt (2012) created a model of the structure of social media, and included seven pillars, such as identity, conversations, sharing, reputation, presence, relationship, and groups.

According to structure, the purpose of the social media platform is different. For example, *blogs* require self-representation and self-disclosure, and low social presence is needed with private communication with followers. *Social networks* such as *Facebook* have high self-representation, and social presence is required (Kaplan & Haenlein, 2010). Davidsson & Thoresson (2019) stated that, regarding the frequency of social media, *Instagram* and *Snapchat* have increased most in the Swedish context. Furthermore, *Facebook* is still the largest social media platform in terms of users, and women are more frequent users of social media than men. However, new patterns have been seen among users. Fewer social media users post and share information and they communicated more with private messages and chat features. The use of social media differs in age, youths used *Snapchat* and ignored *Facebook*. Moreover, *Facebook* was used frequently among elderly (Davidsson & Thoresson, 2019). This thesis examined social media used to communicate with followers and friends, i.e. platforms such as *Facebook*, *Instagram*, *Snapchat* and *Twitter*. Platforms that include chat features, as well as allow updates of various kinds such as posting photos or writing messages. Moreover, in a more general perspective of social media usage, not purely the frequency. Also, situations were examined, e.g. social media usage during work hours, and postponing household chores in favour of using social media.

2.2.1 Addiction tendencies

Marino et al., (2018) stated that, addiction to social media is not classified as a disease or reduction, and it should be discussed whether addiction to social media is a disease, or if the addiction is a consequence of other behavioural disorders. For individuals with addictive tendencies, social media can be problematic, and addiction to social media has a negative impact for individual's well-being and is associated with stress (Brailovskaia et al., 2019b). Furthermore, how the individuals present themselves on social media, as well as their intention for the use of social media affects perceived stress levels among individuals (Hawk et al., 2019). The number of followers has been a rating for popularity on social media, and the pursuit of followers is associated with stress and increased social media usage (Brailovskaia et al., 2019b). Some individuals try to be more interesting, edit images to meet norms and try to make images look spontaneous when in reality they are staged (Hawk et al., 2019).

2.3 Social media usage and perceived stress

Today, a number of events and expectations in society require individuals to be constantly connected. It is an expectation to respond, whether it is working time or not, a sense of compulsion to respond can emerge (Barley, Meyerson & Grodal, 2011). Social media use during work hours can lead to stress, as the individual is dealing with things from their private life and at the same time has to deal with work problems (Brooks & Califf, 2017). On the other hand, several individuals need social media at work (Barley et al., 2011). Stress due to social media during work hours is different depending on intention, for example, managing private problems on social media is different from using social media for work assignment (Brooks & Califf, 2017). Individuals with high levels of daily stress are more likely

to use social media frequently, they used social media to change their mood and find support from other users (Brailovskaia et al., 2019a). Frequent social media use is associated with increased stress and it interferes with daily functions (Turel et al., 2018). *Facebook* use in connection with acute stress postpones the reaction of stress (Rus & Tiemensma, 2018). However, studies have shown that positive emotions are associated with social media use, since social media distracts negative emotions and individuals are unable to cope with their negative emotions, social media offers positive experiences as well as increased recognition (McBride, 2017). Turel et al., (2018) argues that likes and comments are triggers for the brain's reward system, and abstinence may arise for confirmation when the individual does not receive likes and comments. When it is connected to positive emotions, the individual tends to adopt the behaviour again and it can be stressful, and even lead to addiction. The pursuit of likes contributes to stress, and this behaviour is harmful for individuals (Turel et al.,2018).

Individuals receive support on social media, which can be helpful as other individuals can find solutions to their problems, however, stress arises if individuals are unable to reach this support (Brailovskaia et al., 2019a). Several factors determine stress, e.g. financial and socioeconomic circumstances contribute to stress (Hagqvist, 1998; Lindström, Fridh & Rosvall, 2014). Stress could be caused by illness in relatives, it can also occur in a traumatic experience (Bartley & Roesch, 2011; Steptoe & Kivimäki, 2012). Sleep is important for coping with stress, sleep corresponds to stress, and during sleep resources are replenished (Bartley & Roesch, 2011; Danielsson et al., 2012). Using social media can possibly lead to stress and other mental issues (Brailovskaia et al., 2019b). Frequent use of social media affects the individual's well-being and addictive use of social media leads to increased stress (Rasmussen et al., 2020). Consequently, addictive tendencies to social media tends to increase the use of social media due to daily stress (Turel et al., 2018).

2.4 Theoretical framework

The research field of social media is still growing, and it is not proven how social media affects an individual's quality of life. Intentions for using social media are different (Pelling & White, 2009; Campisi et al., 2015). Individuals who rely on social media have an increased risk of stress (Denq et al., 2018). Hawk et al. (2019) claimed that reasons for social media use vary among individuals. A common reason is to *"show their life"* to other users, a behaviour which is harmful if the individual expects recognition. Acknowledgement with *"likes"* leads to a damaged self-image, and if individuals receive less recognition, they start to edit to get more likes and increase their time on social media (Hawk et al., 2019). In the present study, *Theory of Planned Behaviour* (TPB) was used as a theoretical framework. The theory was considered useful for analysis and framework, it was also used to investigate addictive tendencies on social media, since all determinants in theory may influence the individual's behaviour on social media.

2.4.1 Theory of Planned Behaviour

Pelling & White (2009) used *TPB* to investigate intention on social media, they used the theory to predict the individual to adopt an addictive behaviour. In addition, their study was longitudinal with two occasions for measurement. The current thesis included one measurement. However, since causal association was not measured, predictions could not be made, although the probability of the addictive tendencies could be examined. Thus, it was relevant to examine individual's probability of a behaviour and examine the probability of individuals being exposed to a risk, and whether the risk was associated with the individual's intention. Pelling & White (2009) argues that the theory is widely used, especially in behaviours including technology. Azjen (1991; 2005) claims that, *TPB* assume whether an individual embraces a behaviour. Embracing a behaviour and actually adopting the behaviour is related to the individual's intention.

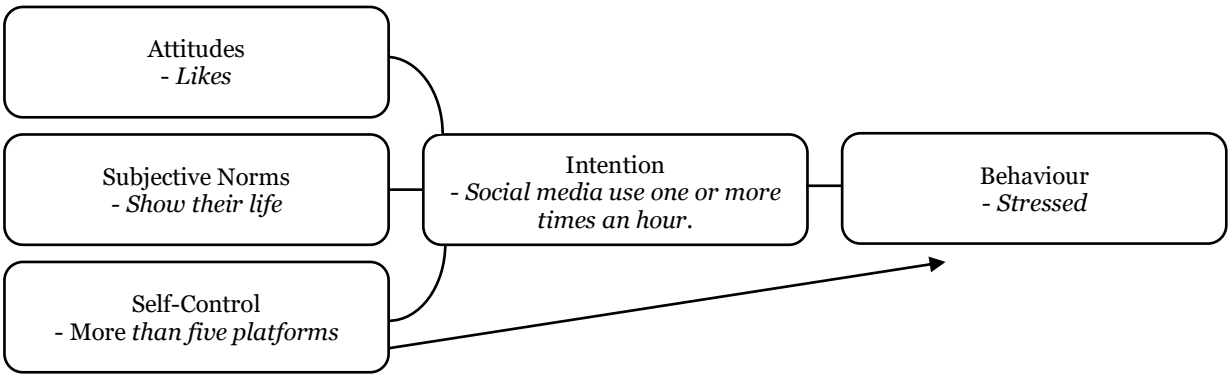
Azjen (1991; 2005) argues that determinants of intention are independent. Attitudes include how the individual benefits from embracing the behaviour. The second determination is subjective norms, it is thoughts from the surroundings, i.e. what are their expectations about the individual embracing a certain behaviour. The third is subjective self-control, it is reflected by the other determinants, and it is about the difficulty for the individual to embrace the behaviour, intention does not have to determine the behaviour. For example, self-control alone can lead to the individual embracing the behaviour. Therefore, intention alone cannot predict the behaviour, it depends on situation and behaviour (Azjen 1991; 2005). In context of social media, Pelling & White (2009) argue that certain factors cause individuals to do 4 unique visits a day on social media. Subjective norms are the reason why the individual believes that surroundings want the individual to visit social media. Self-control means that the individual has control over whether it necessary to visit social media at least 4 times a day (Pelling & White, 2009). Since a different questionnaire was used for the current thesis, the questions were different, although with the same intent.

Campisi et al., (2015) argue that individuals who intend to stay in touch with friends and family on social media had a higher quality of life, than individuals who used social media to show their life, and subjective norms was affected by the individual's social media habits. Furthermore, there are expectations on social media, and individuals expect recognition with *"likes"* (Campisi et al., 2015). Individuals who considered *"likes"* as important had an increased probability of using social media more frequently (Brailovskaia, Velten & Margaf, 2019b; Hawk et al., 2019). If individuals get affected by likes, they hunt for more likes, whether individuals care about likes leads to more or less use of social media, and it determine whether individuals use social media more (Turel et al., 2018). Self-control can partly be determined by the individual, although it is reflected by attitudes and norms (Azjen 1991; Azjen, 2005). In this thesis, membership on more than five social media platforms represented the self-control. Thus, more memberships on social media equals more time spent on social media platforms. Since it is not compulsory to be a member, the individual can completely control which and how many memberships they want in social media.

In *(Figure 1)*, there is an overview of how the theory was modified to fit in the current thesis. Thomson & Morris (2015) mean, sometimes the theory does not fit perfectly. For example,

when a new phenomenon is investigated. This thesis examined the probability of individuals having an intention, which was addictive tendencies in the use of social media and the probability of being stressed due to the addictive tendencies of social media usage. The use of social media once or more times an hour was considered as tendencies to addictive use of social media. Pelling & White (2009) have tested *TPB* in the context of social media. However, some modifications were necessary, they considered four unique visits a day in social media as addictive behaviour. It is worth noting that in 2009, when their study was conducted, the habits of social media were different. Social media now plays a role in many people's everyday life, and the smartphone launch has influenced the use of social media, as it is constantly available.

Figure 1: *Modified figure of theory of planned behaviour in the context of social media (Azjen, 1991)*



2.5 Problem formulation

Social media usage is still increasing, and it has been seen worldwide. New behaviours have occurred due to social media, and it is a part of people's everyday life. Associations have been found between social media and stress, previous findings indicate that addictive behaviours on social media are related to stress. In addition, norms in society have a negative impact on the use of social media. Social media can lead to a negative self-image, and that individuals with tendencies to addictive behaviour have less quality of life. The individual's intention can be decisive for the risks with social media. Social media is a habit that has an impact on the individual's health and it needs to be monitored by authorities, in order to inform about the effects of social media and make recommendations for a healthy use of social media. Furthermore, as it is a habit, it can be prevented, hence it is important that knowledge of the phenomenon is broadened, and which aspects of the phenomenon are harmful to the individual. In the perspective of public health, it is important to examine the consequences of using social media to increase knowledge and understand why it can be harmful to the individual's health.

3 AIM

The aim of the present thesis was to evaluate social media usage in association with stress, and whether there are gender differences in such associations. Moreover, if addictive tendencies for social media usage are associated with stress, and whether the determinants of intention affect social media usage.

3.1 Research questions

1. Is there any association between social media usage and perceived stress levels? Furthermore, are there any gender differences in such association?
2. Is the variation in perceived stress levels dependent on addictive tendencies for social media usage?
3. Is there a relationship between determinants of intention and addictive tendencies in social media usage?

4 METHOD

This chapter contains methodological considerations and execution, including, approach, study design, data collection, sample, analysis, quality criteria and ethical considerations. The present thesis had a positivistic and deductive approach, and evidence is important in this approach, and it was implemented through observations and statistical measures (Bruce, Pope & Stanistreet (2018). Thus, investigated whether social media were related to stress.

This thesis examined associations and differences, and to achieve the aim, the data needed to be measurable and quantifiable (Bruce et al., 2018). Therefore, a quantitative method was chosen, rather than a qualitative method. Another reason was that the purpose of the thesis contained measurements of associations, which was not possible to measure by qualitative method (Bryman, 2011). Furthermore, Creswell & Creswell (2018) argues that quantitative approach also creates opportunities for a larger data collection and the results can be generalized in a larger population (Creswell & Creswell, 2018). However, since it was a small sample, the external validity was affected, although the approach is useful for finding clues, as social media is a relatively new phenomenon (Denscombe, 2014). Moreover, a modified theory was tested, and the result was compared with earlier research. Creswell & Creswell (2018) argue that a deductive approach is objective and assumes to test a hypothesis or theory. Earlier research in the subject was used as a framework and further used to formulate research questions (Creswell & Creswell, 2018). In addition, replicating existing theories and research increases generalizability, as well as allowing for alternative explanations of the phenomenon to occur (Bruce et al., 2018).

4.1 Study design

Cross-sectional design was used in the present thesis, which measures the association and differences between studied variables (Bruce et al., 2018). All variables were measured simultaneously (Creswell & Creswell, 2018). It will help to identify pattern in a case, by time, place, and person, as well as they can identify risks for a disease, and formulate a hypothesis for further research (Bruce et al., 2018). In the present thesis, the study design was chosen in an attempt to find patterns, as well as find risks with social media and addictive tendencies in social media usage. Furthermore, the study design can confirm if there existed any associations and differences between social media usage and perceived stress in the present sample. Moreover, Bruce et al., (2018) argues that cross-sectional studies are useful in planning health. Research in the field of social media and stress is limited, especially in a Swedish context. Although, the sample was too small to make any generalizations for the entire Swedish population, small quantitative studies are useful in new conditions (Denscombe, 2014).

4.2 Data collection

In the current thesis, a questionnaire was completed, and it was inspired by the questionnaire of *"Adolescents life in Västmanland – 2017"* (ALIV-17). However, several questions were modified to suit adults *(Appendix A)*. This current survey also included other information besides stress and social media habits, such as the individual's background and health. For example, physical activity, work condition, economics and gender. Furthermore, an expert who has conducted research in digital habits was consulted to ensure the questions were in the frame of the thesis. In addition, to measure stress, the short version of the Cohen & Williamson (1988) validated stress scale was used *"The Perceived Stress Scale-4" (PSS-4)*, and it has been tested and used in several studies. For questions regarding social media, several questions about frequency and situations was used in the questionnaire. A total of thirty questions were included in the survey. The survey was completed digitally, which reduced the risk of individuals not using social media participating in the survey. Although other issues may arise in digital surveys. In order to prevent individuals from completing the survey more than once, each IP-address was allowed to accept terms for the survey once, the second time someone from the same IP-address tried to accept the terms they were denied. Moreover, a cross-check was done in the data-file to see if anyone intentionally tried to complete the survey several times. The survey was conducted in Swedish, and therefore the Cohen & Williamsons (1988) PSS-4 was translated from English to Swedish, the translation was conducted in consultation with an individual with great knowledge in both languages in order to keep the essence of the scale. Moreover, the final translation used in the survey was similar to Nordin & Nordin (2013) tested version on perceived stress scale.

4.2.1 Recruitment of participants

Random selection was used to recruit participants (Bruce et al., 2018). An inclusion criterion was that the participants would be at least 18 years old. Random selection is often used in health research, thus, the easiest method of sampling (Bruce et al., 2018). In the current

thesis, social media users were of interest. Therefore, another inclusion criterion was that participants must be social media users. In order to increase the representatives as many participants as possible was desired. No limitation of the number of participants were established at first. Since the outbreak of the *COVID-19* pandemic, conditions were changed, a target of 300 participants was set, and when this target was met the analysis could start. Because Marino et al., (2018) has conducted a meta-analysis with social media studies included studies with 286 – 2049 participants, and Pelling & White (2009) had less than 300 participants in their study, 300 participants were considered sufficient to conduct the study. Also, given the current pandemic circumstances, the data were collected digitally. Sampling was accomplished using *Facebook*, which is the platform with most members (Davidsson & Thoresson, 2019). In an attempt to minimize sampling errors, individuals of different age and background were invited to spread the survey, and marketing was done to recruit participants, through sponsored links to the survey on Facebook, and by extension, getting more participants with different characteristics.

4.3 Sample

Social media is frequently used by almost the entire population (Davidsson & Thoresson, 2019), it was difficult to define this sample as representative for Swedish social media users. In the current thesis 300 participants were included, *50.7 %* men and *49.3 %* women. About 30% were of foreign origin, they or their parents were born outside of Sweden. According to the data regarding the participants education, *46.7 %* had studied at the university for at least one year. A majority had full-time job, about *16 %* were students, and about *5 %* were retired while *10,7 %* were unemployed. More participants in the sample owned their residence than rent, and most individuals lived in apartments. Consequently, everyone included in the study owned a smartphone, and its primary use besides calling for most of the sample was social media, followed by reading news. Moreover, 82.3 % used their smartphone to collect community information, and the majority used social media to stay connected with friends and family. In addition, women used social media more frequently, and 16 % of the participants in the sample were more often stressed. Furthermore, 93,3 % used several social medias.

Several things can go wrong when sampling, such as bias or sampling error (Bruce et al., 2018). Bryman (2011) suggests that one potential risk in a study is that of non-response, both internally and externally, a risk that could affects the strength of the result. External non-response means someone has been invited to participate but chooses not to take part. Internal non-response is someone who participates, but for some reason does not answer one or more questions (Bryman, 2011). In the current thesis, there was no external non-response, since the random selection allowed everyone who saw the sponsored link to participate. Therefore, no individual has directly declined participation. Moreover, no internal non-response has been found. Individuals without social media was counted as non-response, since they do not meet the inclusion criteria. Also, no respondent has chosen to not answer one or more questions. Furthermore, it was a short questionnaire only including 30

questions, which could be answered digitally. This survey could be conducted when the individual has time, and it could be answered with a smartphone, computer, or a tablet.

4.4 Variables

In this section, used variables in measurement and analyse are described. Several statistical words and concepts are named during this chapter and continuously in later chapters, all words and concepts are described in *(Appendix B)*. The first paragraph contains variables included in the measurement of associations and corresponds to the first aim, in the second paragraph, the variables used in the measuring of probability is included. The last paragraph includes confounding factors included in measurements.

4.4.1 Measurements

PSS-4 was used to assess the degree of perceived stress, the scale included four items (question 15 to 18 *Appendix A)*. All items formed an index with the range of 0-16 *(M=5,4, SD=3)*, each participant reported a value of stress, low values were equal with stress, and high values indicated absence of stress. The inter-item correlation was *(0.46, n=300)*.

To assess the degree of social media use, various questions were asked about frequency and situations of social media usage. All question formed a scale of social media usage. The scale included five items, question 23, 24, 26, 29 and 30 from the questionnaire *(Appendix A)* were applied, and the inter-item value were *(0.39, n=300)*. The index of social media had a range of 0-15 *(M=6.7, SD=3.0)*, low values corresponded to frequent social media usage, and high values indicated less use of social media.

In order to assess whether the variation in perceived stress levels were dependent on addictive tendencies for social media usage, a modified version of *TPB* was used to examine the probability to be stressed due to social media usage. The index of stress was dichotomized into a binary variable. Since it was of interest to assess whether individuals had an increased probability of perceived stressed due to addictive tendencies for social media usage. Altman (1991) stated that a skewed scale should be divided by the median if it intends to be applied as a binary variable. Therefore, the perceived stress index was split on the median *(Mdn=6)*, higher values equals *"not stressed"* and lower value were in the category of *"perceived stressed"*. The exponential factor was addictive tendencies for social media usage. Addictive tendencies were defined as the use of social media for at least once an hour every day. Therefore, question 23 *(Appendix A)* was dichotomized into at least once an hour vs less than once an hour.

To assess if the determinants had an impact on addictive tendencies of social media usage, each determinant of intention was represented by one question *(Appendix A)*. The subjective norm *(question 27)* was represented by individuals used social media to show their life for others. Self-control *(question 26)* included if individuals had a membership on more than five social media platforms, attitudes included whether likes had an impact on the individual.

All variables were coded into binary variables, the process for the coding can be found in *Table 1*.

Table 1: *Coding of the variables of attitude, subjective norm, self-control, and intention*

How often are you active on social media?	**Intention**	***How many social media platforms are you member of?***	**Self-control**
At least once an hour	At least once an hour	More than 5	More than five
At least once a day		4-5	
At least once a month	Less than once an hour	2-3	Less than five
More rarely		1	
Does "likes" on social media have an effect on you?	**Attitudes**	***Why do you have social media?***	**Subjective Norms**
Yes, likes affects me	Yes	Want to show my life for others	Show their life
		My friends and family have social media	
No, I don't care about likes	No	Relaxing	Other intention
		Need social media for work	

4.4.2 Confounders

Bruce et al., (2018) state that there are several factors which can affect the associations between dependent variable and independent variable. Therefore, confounders are used. The association between two variables could be clearer by using confounders since they also affect the dependent variable, and the confounder could explain some of the variance in the dependent variable (Bruce et al., 2018). In this current thesis, following variables was used as confounders: heart rate enhancing activity (PA2), physically activity (PA), sedentary (SY), *(Appendix A)* contains the questions used for confounders. Previous research has shaped the choice of confounders, they were considered as indicators of stress, and after the test, all confounders correlated with the dependent variable. Furthermore, PA2 and SY were coded in a similar range as PA (table 2), which facilitated the interpretation of the association between confounders and the dependent variable.

Table 2: *Coding of the variables of heart rate enhancing activity and sedentary*

How much time do you spend sitting still each day?		***How much time do you spend doing heart rate enhancing activity each week?***	
All time awake			
8-9 hours	= Very often	Five or more hours	= Very often
5-7 hours	= Quite often	3-4 hours	= Quite often
3-4 hours	= Sometimes	1-2 hours	= Sometimes
1-2 hours	= Never	1 hour	= Never
Never		No time	

Bruce et al., (2018) argue that confounders need to have an association to the dependent variable. All confounders in the present thesis had a correlation to the dependent variable. Field (2009) argues that if there is a strong relation between independent variables, there is risk of multicollinearity, and it is when two variables cover the same area of the variance in a regression. Thus, a regression-model is created to construct the reality, and how effective the model is, depends on how much variation it describes *(R_2-square)*. When having multicollinearity between two variables, they cover the same range, and they explain the same area of the variance (Field, 2009).

What happens when two variables are multicollinear is described (Figure 2). The section which is darker, where the variables covers the same area, is what happens with multicollinear variables. Field (2009) argues that to describe the variance in a variable, low correlation between independent variables is preferred. For example, if you measure an independent variable (1) against a dependent variable, it covers 10 % of the variance, and when measure the independent variable (2) it also covers 10 % of the variance. However, when use both independent (1) and (2), and measure against the dependent variable in same measure, it only covers 15 % of the variance. Since both variables cover same area of 5 %. In the present thesis, the strongest association between social media usage and confounders was between *SY* and social media usage *(r=0.19, p=0.001)*. PA had *(r=-0.16, p=0.005)* and PA2 *(r=-0.15, p=0.006)*. Analysis in *"variance inflation factors"* of the social media variable, *PA (VIF = 1.853)* have strongest effect. When having multicollinear variables, standard error increases (Bruce et al., 2018).

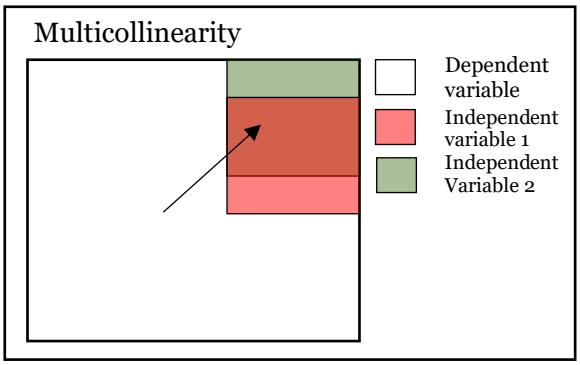


Figure 2: *Modified figure of Multicollinearity after explanation by Field (2009).*

4.5 Analysis

All data were analysed in IBM SPSS Statistics (version 24, IBM Corp, Armonk, NY, USA). First, the correlation was measured between independent variables and dependent variable. According to Field (2009), a significant r-value= *(0.00 – 0.19)* is very weak, *(0.20 - 0.39)* is weak, *(0.40 - 0.59)* is moderate, *(0.60 - 0.79)* is strong, and *(0.80 - 1.0)* is very strong correlation.

Spearman's rho was used to control for correlation, since the variables was not normally distributed. Field (2009) describes *Spearman's rho* as non-parametric analysis to measuring correlation. However, non-parametric tests should be used when data are not normally distributed, since non-parametric tests adjust for peaks and distortions in the distribution (Field, 2009). Furthermore, skewness was measured, in this study the *Kolmogorov-Smirinov Test (K-S Test)* was used for measure skewness. The stress variable was skewed *(D (300) 0.102, p<.001),* also the index of social media was skewed *(D (300) 0.080, p<.001)*. Field (2009) argues that when the *K-S Test* is significant, it confirms the skewness of the variable. In addition, *(D)* is the value of skewness, *D-values* from 0.05 and lower is acceptable and confirm that the variable is normally distributed (Field, 2009). Therefore, *Spearman's rho* was applied for measuring correlation.

4.5.1 Analysis in associations and differences in the association

To measure the strength of the association, a *Generalized Linear Model* with poisson distribution *(Poisson Regression)* was conducted. Nelder & Wedderburn (1972) argue that the *Generalized Linear Model* can manage data which not are within the frame of assumptions for a standard linear regression. Lawless (1987) argues that one assumption for the application is that the logarithm has a linear distribution, and it predicts the outcome by a log count in the dependent variable. *Poisson Regression* does not require normal distribution (Lawless, 1987). In the present thesis, the dependent variable was considered a log count, i.e. incidences, since perceived stress levels were measured in a range of 0-16.

Field (2009) argues that when the data not have normal distribution, non-parametric tests is to prefer, as peaks and distortions are considered. Furthermore, Lawless (1987) argues that this analysis can be applied when the dependent variable is measured on a scale, and the analysis allows for confounders (Lawless, 1987). Since there was more than one independent variable included in the regression, it was a multiple regression (Field, 2009). Therefore, a *Multiple Poisson Regression* between social media usage and perceived stress levels was conducted along with confounding factors, i.e. *PA, PA2*, and *SY*. All measures in association was conducted both in the total sample and stratified between men and women.

The *Poisson Regression* does not show a *standardized beta-coefficient (zB)*, instead a confidence interval was calculated, which indicated that we could say with *95 %* probability that the B-coefficient *(B)* would be between two specific values. The analysis also confirms whether this value was significant. Furthermore, Lawless (1987) states that for each increased unit on the independent variable, the predicted log count in the dependent variable increases with the value of *B*. Moreover, incidence rate *(Exp B)* is also calculated, which indicates that for each increased unit on the independent variable, the dependent variable increases with the value of *Exp B*, which also can be calculated in percent (Lawless, 1987). In addition, Bruce et al., (2018) argues that, generally for all measurement, small standard error and reasonable confidence interval increase the accuracy in the study.

4.5.2 Analysis in behaviour and intention

Pelling & White (2009) established that 4 unique visits on social media a day was considered addictive behaviour on social media. In this thesis, social media usage for at least once an hour was defined as addictive tendencies for social media usage. It was examined using Isaac Azjen's (1991) *TPB* with some modifications. Perceived stress was examined as the behavioural outcome, and addictive tendencies was the intention to perceived stress according to the structure of the theory.

Multiple Logistic Regression was used to examine intention and behaviour, since the dependent variable was categorical, and probability was examined. Field (2009) argues that the *Logistic Regression* requires binary distribution, this analysis does not impose requirements for normal distribution, which means that the associations do not need to be linear. This measure aims to examine a group that had a certain precondition, which was addictive tendencies for social media usage. Therefore, this measurement makes no

requirement that the exposed group to be as large as the unexposed group or vice versa. Furthermore, this regression calculates an odds ratio *(Exp. (B)* and *CI*, values above 1.0 shows a positive association (Field, 2009).

Addictive tendencies for social media usage was examined by subjective norms *(show their life)*, attitudes *(likes)*, and self-control *(more than five memberships)*. Pelling & White (2009) used regression analyses in three steps to predict intention and behaviour. They included belongness as an extra feature in their model of the theory, it was not measured in this study. Therefore, only two steps were measured in the model of examining the behaviour and intention (Pelling & White, 2009). A two-step regression was considered useful since biological factors were examined in the first step, then the exponential factors.
First step in both regressions included age and gender, i.e. biological factors. In order to examine the determinants effect on the probability of addictive tendencies, attitudes, subjective norm, and self-control were included in the second step. Furthermore, to examine behavioural outcome, addictive tendencies for social media usage and self-control was included in the second step to examine the probability of becoming stressed. Self-control was included in the second step since Azjen (2005) argues that self-control alone can possibly lead to the behavioural outcome.

4.6 Quality criteria

To ensure the quality of the study, precautions have been taken. The following section describes criteria for quality in the current thesis, both internal and external.

4.6.1 Reliability and validity

Reliability is about the quality, and the extent to which the results are valid if the study were repeated, i.e. the extent of measurement at one point will correspond to the same measurement when was conducted another time (Bruce et al., 2018). To increase reliability, a *test-retest* can be used, given the time frame and size of this thesis, a *test-retest* was not within the scope of this thesis (Field, 2009).

Creswell & Creswell (2018) claimed that reliability is also affected by the instrument's consistency, and it is depended on the degree of random errors in the instrument. Furthermore, it is not possible to ensure a complete lack of error, but the reliability is increased with less error in the study (Creswell & Creswell, 2018). In the present thesis, measures of internal consistency were possible to conduct. Creswell & Creswell (2018) claims that *Cronbach's Alpha* is a measure of internal reliability, and values of 0.8 or more are acceptable (Creswell & Creswell, 2018). However, Nunnally (1975) argues that values of 0.7 or more are acceptable values.

Ferketich (1991) argues that, the alpha value is affected of both sample size and the number of items, therefore inter-item correlation is a way to understand if the scale is consistent. In this thesis, inter-item correlation was measured since perceived stress included four items

and the index of social media usage had five items. Furthermore, Ferketich (1991) state that there is no general directive for values of inter-item correlation, whereas a guideline is that inter-item correlation below 0.30 indicate that the items does not correlate well. In addition, inter-item correlation over 0.70 indicate that some of the items are redundant, thereof unnecessary (Ferketich, 1991). The inter-item correlation in perceived stress scale in this thesis was *(0.46, n=300),* and *(0.39, n=300)* in social media usage. Ferketich (1991) argues that an average inter-item correlation of 0.40, corresponds to an alpha of 0.80. Nordin & Nordin (2013) have evaluated *PSS-10* in the Swedish context, where the evaluation included 3406 participants using random selection. In their evaluation, the internal consistency was *(a=0.84)*, additionally, in other global evaluations have been alpha presented from 0.80 – 0.86.

Bruce et al., (2018) mean that validity is a criterion for the credibility internally in the study, and that the instrument measure what is intended. In the present thesis, a questionnaire was used as instrument, which is considered useful in cross-sectional studies (Bruce et al., 2018). Field (2009) describes validity as if the intention is to measure weight, the measurement must show same weight when using another instrument. Bruce et al., (2018) argues, to ensure validity, several types of validity are considered, such as *face validity*, *content validity*, *criterion validity* and *construct validity*.

Face validity is the subjective estimate of the instrument, i.e. if the questions are relevant, reasonable or if they are described clearly (Bruce et al., 2018). A selection of questions from the *ALIV-17* has been used, and the survey has been used since 1995 and has received similar scores over the years (Hellström et al., 2012). Bruce et al., (2018) argues that the study can be tested before the start. Hence, a small-scale test was conducted, five individuals in different ages were asked to complete the survey before the actual survey was conducted. Furthermore, if they understood the questions correctly, the likelihood increases that the actual participants would understand the questions, which is in accordance to the face validity (Bruce et al., 2018). However, a small modification in the questionnaire was necessary after the test study, in item 7 (Appendix A), the option of retired were added since it was not included in the pilot study.

Content validity is theoretical as *face validity*, and its purpose is to estimate whether the content of the questionnaire was representative for the entire spectrum (Bruce et al., 2018). In constructing of this survey, an expert was consulted in order to ensure that the survey represented the entire spectrum. Furthermore, Bruce et al., (2018) argues that *criterion validity* is a third type of validity, it is divided into two groups which are *concurrent* and *predictive*. The *predictive* determine whether the instrument can predict changes in key variables. *The concurrent* confirms if the questionnaire measure what it is intended to measure. For example, a questionnaire about pain can be accomplished, later a physical exam is conducted. Similar results indicate that the *concurrent criterion validity* was good (Bruce et al., 2018). However, within the time frame of this thesis, it was not possible to manage *criterion validity*.

Bruce et al., (2018) stated that a fourth type of validity which is important for credible result in the study, namely *construction validity*. *Construction validity* is divided into two groups, *convergent construct validity* and *discriminant construct validity*, and it is about how the instrument measures the hypothesis. *Convergent construct validity* can be measured against other similar concepts (Bruce et al., 2018). Nordin & Nordin (2013) measured stress against factors such as, depression *(r=0.6)*, anxiety *(r=0.5)*, and mental/physical exhaustion *(r=0.7) (*Nordin & Nordin, 2013). In this thesis, depression and anxiety are not measured, although, mental/physical exhaustion is measured *(r=6.6, p<.001)*. Discriminant construct validity is similar, but the measure is in another concept which is not similar to the examined concept. For example, measuring an apple with a pear.

4.6.2 External validity and generalizability

External validity is to which extent the result could be generalized into another population, and whether the result is valid for individuals not included in the study (Bruce et al., 2018). Creswell & Creswell (2018) mean, the difference between external and internal validity is that internal validity applies to the extent it is possible to draw conclusions in the current study, and external applies to the extent conclusion can be drawn outside the context of the study, i.e. if the result is valid in other contexts (Creswell & Creswell, 2018). In the present thesis, a random selection was used for sampling. There were no other inclusion criteria, except that the participant had to be social media users and 18 years old. Thus, it allowed for individuals with different characteristics to participate in the study. Therefore, the sample included individuals with different socio-economic status, ethnicity and living conditions.

4.7 Ethical consideration

Swedish Ethical Review Authority (2020) stated that research or scientific work aims at gathering new knowledge within a phenomenon. Work completed on a scientific basis should be considered whether the work requires ethical approval. Student work at the bachelor's or master's level is not covered by the *Ethics Examination*-law in Sweden. However, if the results are intended to be used in a research project, ethical approval may be needed (Swedish Ethical Review Authority, 2020). This thesis applied the guidelines from The World Medical Association (2018) in the *Helsinki Declaration* and followed Swedish laws, which state that this type of study with anonymous participants does not need to apply for approval in medical factuality.

In this thesis, ethics have been present throughout the process, and ethical aspects were considered. Bryman (2011) argues that participants should not be subjected to physical injury, mental damage, humiliation or violations. Moreover, there are principles to consider (Bryman, 2011). These are as follow; *the information requirement, the consent requirement, the confidentiality requirement and the use requirement* (Vetenskapprådet, 2017). All participants were informed about the study before participation. The information letter included that participation was voluntary and anonymous, all participants could leave the

study at any time, and nor was it possible to track any participant in the study. Also, it was included why the study was important, and why it was important to answer correctly.

According to the Swedish Ethical Review Authority (2020), the processing of sensitive personal data or personal data regarding violations of law must be processed according to law. Personal data is information that includes information that can be directly or indirectly attributed to a natural person living. Sensitive information includes, racial or ethnic origin, political views, religious or philosophical beliefs, union memberships, health, sexual life and sexual orientation (Swedish Ethical Review Authority, 2020). The study does not contain any specific issue that was considered to contain sensitive information, nor could trigger negative behaviours in the respondent.

In the current thesis, *Survio.com* (2020) was used to collect data, which is an international company founded in 2012, and which complies with *General Data Protection Regulation* (GDPR). Thus, personal data were treated confidentially, and the EU's directive on the processing of personal data *(EU) 2016/679* was followed (Survio.com, 2020). In this thesis, participants were asked to accept terms, and the survey did not start until these were accepted. Moreover, all data have been handled with caution, the submissions of the surveys was monitored closely and completed surveys were moved regularly and deleted from survio.com to the author's private computer, the information was stored on an external hard drive with password access only. Furthermore, only authorized individuals had access to the information, such as examiner and supervisor.

5 RESULT

The following chapter contains the results from the analysis of the data. Statistical terminology and concepts are described in *Appendix B*.

5.1 Associations between social media usage and perceived stress levels

A *Multiple Poisson Regression* was used to assess the association between social media usage and perceived stress levels *(table 3)*. The likelihood ratio chi-square test indicated that the full model was a significant improvement in fit over a null model *(x_2 (4) = 160.02, p<.001)*. A significant association was found, which indicated that social media usage was a predictor of perceived stress level in the total sample *(B=0.087, S.E.= 0.008, p<.001)*. For every unit increased on social media usage, the predicted log count of perceived stress levels increased by 0.087. Furthermore, the incidence rate ratio indicated that for every unit increased on social media usage, the perceived stress levels increases by 9.1 percent *(Exp B = 1.091, CI95% = 1.073 – 1.108, p<.001)*.

Table 3: *Associations between confounders, social media usage and perceived stress*

	B	CI 95 %	Exp B	CI 95 %	p
Social media usage[a]	0.087	(0.070 - 0.103)	1.091	(1.073-1.108)	<.001
Confounders[b]					
Physical activity	-0.094	(-0.163 - -0.025)	0.910	(0.850 - 0.975)	0.007
Heart rate enhancing activity	-0.039	(-0.092 - 0.013)	0.961	(0.912 – 1.052)	0.140
Sedentary	0.003	(-0.045 - 0.051)	1.003	(0.956 - 1.052)	0.900

a – *Continuous scale with range of 0-15,* b – *Ordinal scale with range of 1-4*

5.2 Associations between social media usage and perceived stress levels depending on gender

To assess whether there was any association between social media usage and perceived stress levels depending on gender a Multiple Poisson Regression stratified in gender were conducted *(Table 4)*. The likelihood ratio chi-square test showed that the full model was a significant improvement in fit over a null model *(x_2 (4) = 103.41, p<.001)* among men. Furthermore, a significant association was found between social media usage and perceived stress levels among men *(B=0.081, S.E.= 0.010, p<.001)*, which indicated that for every increased unit on social media usage among men, the predicted log count increases with 0.081 in perceived stress levels among men. Moreover, the incidence rate ratio showed, for every unit increased on social media usage among men, the perceived stress levels in men increases with 8.4 percent *(Exp B = 1.084, CI95% = 1.062 – 1.106, p<.001)*.

Table 4: *Stratified associations between confounders, social media usage and perceived stress*

	B	CI 95 %	Exp B	CI 95 %	p
Social media usage[a]					
Men	0.081	(0.060 – 0.101)	1.084	(1.062 – 1.106)	<.001
Women	0.101	(0.073 – 0.129)	1.106	(1.076 – 1.138)	<.001
Confounders[b]					
Physical activity					
Men	-0.133	(-.233 – -.033)	0.876	(0.792 – 0.968)	0.009
Women	-0.051	(-.147 – .046)	0.051	(0.863 – 1.047)	0.303
Heart rate enhancing activity					
Men	-0.045	(-.121 – .030)	0.956	(0.886 – 1.030)	0.238
Women	-0.042	(-.121 – .036)	0.959	(0.886 – 1.037)	0.293
Sedentary					
Men	0.030	(-.036 – .096)	1.031	(0.965 – 1.100)	0.370
Women	-0.042	(-.115 – .031)	0.959	(0.892 – 1.031)	0.259

a – *Continuous scale with range of 0-15,* b – *Ordinal scale with range of 1-4*

The likelihood ratio chi-square test also showed that the full model was a significant improvement in fit over a null model *(x_2 (4) = 62.39, p<.001)* among women, a significant association was discovered between social media usage and perceived stress levels in women *(B=.101, S.E.= 0.014, p<.001)*, which meant that for every unit increased on social media

usage, the predicted log count of perceived stress levels increases by 0.101, and the incidence rate ratio indicated, for every unit increased on social media usage in women, the perceived stress levels among men increases with approximately 10 percent *(Exp B = 1.106, CI95% = 1.076 – 1.138, p<.001)*.

5.3 Associations between determinants of intention, intention and perceived stress levels

To assess whether perceived stress levels vary due to social media usage depending on addictive tendencies for social media usage, and if there was a relationship between intention and addictive tendencies in social media usage two models of *Multiple Logistic Regression* in two steps were used *(Table 5)*.

Table 5: *Associations in biological factors, determinants of intention, intention and perceived stress*

	Probability to Intention	**B**	**Exp. B**	**CI 95 %**	**p**
Step 1	Gender	1.240	3.455	(2.130-5.606)	<.001
	Age	-0.232	0.793	(0.557-1.129)	0.062
Step 2	Attitude	0.935	2.548	(1.331-4.879)	0.005
	Subjective norm	-0.374	0.688	(0.281-1.688)	0.327
	Self-control	1.390	4.015	(1.713-9.413)	<.001
	Probability to Behaviour				
Step 1	Gender	-0.245	0.783	(0.491-1.250)	0.111
	Age	-0.510	0.600	(0.388-0.928)	0.022
Step 2	Intention	1.561	4.764	(2.636-10.039)	<.001
	Self-control	0.368	1.445	(0.555–3.761)	0.398

The first step included biological factors i.e. age and gender, to examine whether these factors had an effect on the probability of addictive tendencies for social media usage. Gender had a significant association to addictive tendencies for social media usage *(OR=3.455, CI95%=2.130-5.606, p<.001)*, men had 3.4 times increased probability to addictive tendencies for social media usage compared to women, whereas no significant association was found in age.

In the second step, attitudes *(if likes affects)*, subjective norm *(show their life)*, and self-control *(member on more than five platforms)* were included, no significant association was found between subjective norms and addictive tendencies for social media usage. Moreover, a significant association was found between attitudes and addictive tendencies for social media usage, individuals who consider that likes on social media had an impact on them had 2.5 times increased probability to have addictive tendencies of social media usage *(OR=2.548, CI95%=1.331 - 4.879, p<.001)* compared to individuals who not considered likes on social media had an impact on them. Self-control had an even higher probability of addictive tendencies of social media usage, individuals with more than five memberships on social media has four times higher probability of addictive tendencies of social media usage *(OR=4.015, CI95 %= 1.713 – 9.413, p<.001)* compared to individuals with less than five memberships on social media.

In the second model, probability of behavioural outcome *(perceived stress levels)* was examined. In this case, examine whether perceived stress levels vary due to social media usage depending on addictive tendencies for social media usage. The first step includes, biological factors, age had a significant association with perceived stress at p=<0.05 in this model *(OR= .600, CI 95% = 0.388 – 0.928, p=0.022)*, which showed that age had a negative association to perceived stress levels. Furthermore, it indicated that increased age decreased perceived stress levels. No significant association was found between gender and perceived stress levels in this model.

In the second step, self-control *(member on more than five platforms)* and intention *(addictive tendencies of social media usage)* were added to the model. No significant association was found between self-control and perceived stress levels. Furthermore, a significant association was found between intention and perceived stress levels *(OR=4.764, CI95%= 2.636 – 10.039, p<.001)*, individuals with addictive tendencies of social media usage had 4.7 times higher probability to perceive stress compared to individuals without addictive tendencies of social media usage.

6 DISCUSSION

In the following chapter, considerations and results in the current thesis will be discussed, as well as the benefits of this study in the perspective of public health. The aim of the present thesis was to evaluate social media usage in association with stress, whether there are gender differences in such associations, moreover if addictive tendencies for social media usage are associated with stress, and whether the determinants of intention affect social media usage. The results from the current thesis indicated that social media usage and perceived stress levels had an association, and addictive tendencies of social media usage was related to perceived stress. Attitudes and self-control had an association to addictive tendencies of social media usage. However, in which direction was unclear since causal association was not measured.

6.1 Methodological discussion

This thesis has examined whether social media usage was harmful from a public health perspective. The use of social media is only of interest in this perspective if it affects the well-being of the individual. Previous research indicated that the use of social media was associated with mental health problems and stress (Turel et al., 2018). A quantitative method was used, as it allows a larger sample and analysis in association (Bruce et al., 2018). In addition, earlier research was used as framework. On the other hand, Creswell & Creswell (2018) argue that qualitative studies create a deeper understanding of the phenomenon. However, by using a qualitative method, the purpose of the thesis would not have been met,

since associations were measured (Creswell & Creswell, 2018). Bruce et al., (2018) argues that, in quantitative studies, numbers are measured, while qualitative studies are about words and the essence. In quantitative studies, researchers analyse quantifiable data to describe prevalence, associations, and differences. This thesis was based on descriptive data and all variables were collected at the same time (Bruce et al., 2018). A cross-sectional design was used, as the timeframe and size of the thesis were limited, and the design is well-suited for the aims of this thesis.

Bruce et al., (2018) argues that a cross-sectional design is a snapshot in time, and that all data is collected simultaneously. The study becomes somewhat limited, as causal association could not be measured. Therefore, the behaviour cannot be predicted, nor can the direction of the association be determined. However, it was useful for measuring associations, and the probability of the behaviour can be calculated, although it could not be concluded whether the behaviour causes individuals to be stressed or whether stress shapes the behaviour. It is a pitfall for researchers, by drawing conclusions about causal associations when this is not possible (Bruce et al., 2018). Creswell & Creswell (2018) argues that causal associations can be studied in longitudinal studies, that participants must be studied over time, and several occasions of measures are included (Creswell & Creswell, 2018). However, a cross-sectional design could respond to the purpose of this thesis, and it was not possible to conduct a study with longitudinal design for practical reasons. For this assignment, the opportunity for longitudinal studies would be by taking advantage of existing data collection, and this was considered to contradict the author's own study as educative, as this was a learning opportunity, and it provided valuable experience for future work. Although, causal associations could not be examined, the study design was considered as appropriate for this thesis. Especially, since it was possible to investigate several outcomes, as well as examined differences between groups.

6.1.1 Sampling and materials

Creswell & Creswell (2018) recommended that a checklist is needed when conducting a study, according to a selection of who will participate, how to recruit, and who should be included and excluded. Furthermore, criteria's need to be set for inclusion and exclusion, as well as how many should participate (Creswell & Creswell, 2018). In the present thesis, this checklist was used as a framework, 300 participants were considered a sufficient number of participants studied for the aim of the thesis to be met. The thesis was conducted with a random selection, i.e. an individual's characteristics were not a criterion for being included in the study, and all individuals in the population had a chance to participate provided they were over 18 years and were member on at least one social media platform.

Social media usage and perceived stress were examined, social media were considered suitable channels for recruiting participants. *Facebook* was used, where there are most members according to previous research (Davidsson & Thoresson, 2019). Bruce et al., (2018) argues that there is a risk of missing out in any group, when the sample is not representative for the population and the risk of sampling error and bias increases (Bruce et al., 2018). Previous research indicated that younger adults in age of 18-25 are not using *Facebook* to the

same extent as the older generations (Davidsson & Thoresson, 2019). Furthermore, other risks in using random selection, is that only people who are interested in the subject takes the time and to answer the survey, whereas individuals who the researcher would like to investigate may not be interested in participating (Creswell & Creswell, 2018).

In this thesis, it was difficult to determine whether only interested individuals participated, however, individuals using social media are included in the study, and can therefore be expected to have an interest in the subject. In addition, the material demonstrates differences in the sample's characteristics, and several actions were taken to avoid bias in the sample, sponsored links on *Facebook* with invitation to the survey were used to recruit participants, and to reach a larger number of participants and ensure that several groups of individuals were included in the study, individuals of different ages and with different background were also asked to share the survey. This approach was chosen to reduce the risk of individuals feeling compelled to participate, and in order not to just mirror the author's friends on *Facebook*.

Bruce et al., (2018) argue, although the sample has differences in characteristics, whether the sample could be generalized to other populations depending on the effect size of the sample. In this thesis, reaching a reasonable effect size considering the circumstances and extent of the thesis was difficult, especially, by conduct an own survey. Therefore, 300 participants were considered a sufficient number due to the available timeframe and circumstances. However, Creswell & Creswell (2018) state that small sample sizes should not be underestimated, it is possible to find interesting information and create hypothesis for further research. Moreover, 300 participants may be considered a small sample, but smaller studies with fewer participants have been published within the subject (Marino et al., 2018)

There were difficulties in drawing conclusions about the external non-responses and in which direction it affected the result. In the current thesis, there was a risk that some individuals may have noticed that the study was taken place, but they chose to not take part in the survey. As regards internal non-response, the questionnaire was short, and it may be a reason why no internal non-response was found. Furthermore, the questionnaire included thirty questions, covering four themes; perceived stress, social media usage, health and demographical background. In addition, the reason for the large number of internal responses may be that the questions have been tested earlier in other studies. An expert was consulted to check the questionnaire and ensure its relevance for the purpose of the thesis. On the other hand, it may be a sign for only individuals who have a particular interest in the study conducted the survey. Since the survey was distributed digitally, it could be considered easy to execute the survey, it could be conducted on computers, smartphones and other devices.

In the thesis, considerations were made regarding data collection. An alternative might be to use existing data, it would probably been more reliable compared to an own data collection. However, secondary data can lead to different limitations. The availability of data may be limited, and the possibility may be that the author would not have access to all variables intended for the thesis. Furthermore, with its own questionnaire, the questionnaire can be

calibrated as desired and contain questions only relevant to the thesis. Thus, it can be considered an advantage, since the survey was small, and the likelihood increased that the participants are focused throughout the questionnaire. Bryman (2011) considers that large surveys, with a large number of questions, increase the risk of individuals losing focus when they complete the study. In the end, it was decided to design an own questionnaire, even if tested questions were selected. Bryman (2011) claims that there is a risk with self-reported questionnaires, as the individual may underestimate their health or consciously respond incorrectly. The risk was imminent in this thesis as well, data from healthrecords may have minimized that risk. In the current thesis, this was not an option, as the study contained specific questions about social media habits, which would be difficult to find in healthrecords.

6.1.2 Analysis

In this thesis, the gender distribution was almost equal, which made it possible to compare gender. When measuring, two indexes were computed, one for the dependent variable which represented perceived stress levels and one for the independent variable which included social media usage. In the associations between social media usage and perceived stress levels, correlations were controlled using *Spearman's rho* since the distribution of the perceived stress variable was skewed. To examine the strengths of the associations, a *Multiple Poisson Regression* between social media usage and perceived stress level was conducted, along with confounding factors.

Field (2009) claims that, a *Multiple Linear Regression* is used when the dependent variable is continuous. However, non-parametric measurements are preferred with skew data, although they are not normally as powerful. In non-parametric tests take skewness is considered (Field, 2009). A *Poisson Regression* was considered as the best choice, since the variable of perceived stress did not meet the criteria for normal distribution, nor did the variable of social media usage. Lawless (1987) state that the *Poisson Regression* predict the outcome by a log count in the dependent variable. Therefore, this analysis does not require a normal distribution (Lawless, 1987). In this thesis perceived stress was measured on a scale with the range of 0-16. The dependent variable was considered as a log count, and it could be predicted from the independent variable. Furthermore, in order to assess whether there were any associations between social media usage and perceived stress levels depending on gender, a *Poisson Regression* was conducted stratified in gender. Although the regression analyses were stratified in gender, it could not statistically measure if there existed any differences in gender. On the other hand, it could visually show if *B* and *CI* differs depending on the breakdown.

In this thesis, the correlation between social media usage and confounders was weak according to Field's (2009) assessment of strength in correlation, and the risk of multicollinearity were considered low. In addition, the analysis of variance inflation factors indicated that all confounders could be included. PA had the highest value, it was below 2.0 and was not considered as a problem. Field (2009) argues that when a model in the regression analyse is created, reality attempts to be constructed. The model should describe as much of the variance as possible, and when multicollinearity exist between independent

variables, they cover the same variance. Furthermore, how much of the variance covered by a model is interpreted with an adjusted R_2-value (Field, 2009). Ferguson (2009) considers that adjusted R_2-value above 0.64 is strong, and values between 0.25 – 0.64 is moderate. Cameron & Trivedi (2013) argues that the *Poisson Regression* does not have a corresponding R_2-value as found in the *Linear Regression*. Pseudo R_2-square exists, although it is often used as a counterpart in research, this is not equivalent to the adjusted R_2 used in the *Linear Regression*. Therefore, these statistics should be interpreted with caution (Cameron & Trivedi, 2013). In the present thesis, Pseudo R_2-square was not interpreted, although it was mentioned that the *Poisson Regression* was preferable in view of the distribution of the dependent variable, the strength of the model has not been interpreted and it was considered as a weakness. On the other hand, a *Linear Regression* could not be conducted according to the distribution of the dependent variable. However, Bruce et al., (2018) argues that small standard errors and a reasonable confidence interval indicate accuracy in the measurement. The confidence interval using the Poisson Regression were considered reasonable, as well as the number of standard errors were low.

The probability of intention and behaviour was examined in a two-step *Multiple Logistic Regression*, Field (2009) argues that it requires a binary variable as a dependent variable. Since the variable of perceived stress was divided on median to a binary variable, a risk existed that the groups were not representative as stressed and not stressed. Although, Altman (1991) argues that continuous variables with skewness should be split on median. Furthermore, Field (2009) argues, in a *Logistic Regression* an *OR* is calculated, when it is above 1.0, it indicates a positive association, and this measure can examine the probability of the outcome. Although, the direction of the association cannot be confirmed (Field, 2009). For example, in this thesis, individuals with addictive tendencies of social media usage had increased probability to perceived stressed than individuals without addictive tendencies of social media usage. Thus, the measurement does not confirm that addictive tendencies of social media usage causes individuals to perceive stressed or vice versa, which can be considered as a weakness. It can only state that there was an association, and individuals with addictive tendencies of social media usage was more likely to perceived stress than individuals without addictive tendencies of social media usage.

Another weakness was that only one question represents each determinant of intention. In further research several questions are needed within each determinant to clarify the association, as well as to increase the internal consistency of each determinant, nor were confounders included in this measure, which could affect the result in any direction. Nevertheless, it can be discussed whether stress could be defined as a behaviour. On the other hand, social media as a phenomenon was not interesting in the perspective of public health if it not affects an individual's well-being. Therefore, stress was the behaviour variable in this theory, if the thesis used a perspective of science of behaviour, addictive tendencies or behaviour might have been the behaviour variable.

6.1.3 Quality Criteria

In the current thesis, several commitments were made to ensure the quality of the thesis. Given the time frame it was not possible to conduct a *test-retest*. Although the questions have been tested in other studies. The measurement of inter-item correlation showed reasonable values, which can be considered as an indication that the instrument was calibrated. Perceived stress had inter-item correlation of 0.46, according to Ferketich (1991) inter-item correlation of 0.40 correspond to alpha of 0.80, and Robinson et al., (1991) states that alpha from 0.80 and higher are exemplary value, while the inter-item correlation is exemplary over 0.30. Furthermore, nor was any item redundant in the perceived stress scale or in the index of social media usage. According to Ferketich (1991), the sample size and the number of items affects the alpha value. Therefore, inter-item correlation was measured instead of Cronbach's alpha.

Nordin & Nordin (2013) have tested *PSS-10* in the Swedish context, the alpha value was 0.84, and the correlation between stress and mental/physical exhaustion was *(r=0.7)* in the evaluated version of *PSS-10*. In this thesis, the correlation was highly significant *(r=6.6, p<.001)* between *"Exhausted mentally and physically"* and perceived stress. Robinson et al., (1991) argue that convergent validity can be measured by examine the correlation between similar concepts, by having highly significant correlation with more than two similar concepts, the convergent validity is exemplary. In the current thesis, only one similar concept was measured, which means that the study can only achieve minimal convergent validity (Robinson et al., 1991). Nordin & Nordin (2013) argue that depression and anxiety are similar concepts to stress and can therefore be used to measure convergent validity. Moreover, *PSS-4* contains four items, while the evaluation has been done with *PSS-10* which contains ten items (Nordin & Nordin, 2013). Although it can be considered that the *r-value* were within reasonable range in the current thesis. The sample size was small which could affect the values in any direction. *PSS-4* was used in this thesis and has not been evaluated in the Swedish context. Vallejo et al., (2018) mean, *PSS-4* is easier to use, since it is more stable. Especially, in studies with fewer participants, and *PSS-4* has been used in several published studies (Vallejo et al., 2018).

Demographical and background questions are inspired by *ALIV-17*, which uses validated questions, although modification was to some extent necessary to suit adults. Hellström et al., (2012) confirms that the questions *in ALIV* have been tested several times with similar result. Since there was no validated questionnaire available for measuring social media usage in the same context as this thesis, i.e. question about frequency and situations. Merino et al., (2018) argues that the most commonly used scale to measure the use of social media is *"Development of addiction to Facebook scale"*, which is validated. However, it cannot be used for social media in general, and nor included situations such as social media usage at work or postponing household chores. In addition, each platform is unique, and individuals of different ages use different platforms to a varying extent. A general picture of the problem can be described if the whole concept of social media is used, therefore the whole concept was used in this thesis.

The social media index had an inter-item correlation of 0.39. Ferketich (1991) argues that there is no general directive of inter-item correlation, but inter-item correlation below 0.30 indicates that the scale does not correlate well (1991). Robinson (1991) stated that inter-item over 0.30 is exemplary. Therefore, the index of social media was considered to measure what it attempted, although an established scale for social media usage could have influenced the study in any direction. Furthermore, studies with more specific targeting of a particular platform can determine whether users act differently on the different platforms. Thus, this thesis contained a small sample that reduces the conditions for conclusions outside the thesis context. Therefore, the phenomenon has been examined in a wider extent, in an effort to find clues for further research.

Consultation of experts in the field helps to confirm whether the questionnaire represented the entire spectrum. It is also necessary to test the instrument before starting (Bruce et al., 2018). In this thesis, one expert was asked, to ask more experts could have increased the validity of the thesis, therefore, a test of the study was executed on a few selected individuals before the start of the study. According to external validity, the thesis contained a small sample, although differences in characteristics and a random selection have been used, it was not possible to say that the result was valid outside the context of the thesis. However, several indications have been found in this study, and therefore still useful.

Bruce et al., (2018) believe that it is possible to generalize to individuals in a similar situation and context. Hence, there are contextual factors which have an impact on the guiltiness of the study (Bruce et al., 2018). Pearl & Bareinboim (2014) argues that the purpose of science is to take an experiment from a laboratory and implement it in reality. Thus, the experiment is valid for remaining population. Several things differ between the lab and reality, with external validity including the extent to which the experiment resembles reality (Pearl & Bareinboim, 2014). On the other hand, Denscombe (2014) argues that when investigating a new phenomenon, it is useful to examine a smaller population to find clues to the phenomenon and investigate further with longitudinal studies (Denscombe, 2014). The sample was not in proportion to generalizing to the entire population of social media users in Sweden. On the other hand, since the selection was random, and the sample contained participants with different attributes, indications have been found for future research. More participants would have increased the statistical power, but due to the given time frame and circumstances, the sample was considered sufficient to conduct the study. However, an existing populations survey would provide more power to the thesis.

6.1.4 Ethics

This study was a master's thesis in public health, therefore, no ethical approval was required, however, ethical principles have applied throughout the thesis (The Swedish Ethical Review Authority, 2020). Hellström et al., (2012) argue that these types of studies, including anonymous participation is not in need of ethical approval.

Vetenskapsrådet (2017) describes four ethical principles of research, and they have been considered during the present study, all participants had to read the information letter before

conducting the study and needed to accept the terms of the study in order to participate. The information letter included information about the study, e.g. that the study was anonymous, and the participant have the right to leave the study at any time without any further explanation needed. Furthermore, the questions have been asked in a way that no specific individual can be traced (Vetenskapsrådet, 2017).

The Swedish Ethical Review Authority (2020) stated that researchers must be aware of the study's ethics, and there are sensitive questions that need to be considered before the individual is exposed. In the current thesis, this has been considered, no questions have been used leading to the tracing of any specific physical individual, and no results was presented at the individual level. Moreover, no questions in the survey were specific enough for it to be possible to know who took part in the survey, nor was information presented individually, the results of the thesis were presented at group level (The Swedish Ethical Review Authority, 2020). Thus, the questions have been designed not to induce behaviours with negative health consequences for the individual. If a question makes respondents feel uncomfortable, they may decide not to answer this question. There was a risk when inviting individuals to participate, e.g. that the participant feel that they must participate. However, no requirements were made, and the author does not know if any specific individual participated. Furthermore, individuals who have accepted terms have confirmed consent to the study. Therefore, no participants were found without consent, and this was in accordance with the consent requirement (Bryman, 2011).

The confidentially was considered in the current thesis, data was stored on a hard drive with password, this because unauthorized individuals should not have access to the material. All information was deleted from survio.com regularly, even though they follow rules of confidentially. A risk may arise in digital surveys. For example, the opportunity to conduct the study several times. In the current thesis, the same IP-address could not complete the study twice, it was a setting that has been managed, and google analytics has been used to alert potential submissions made by the same participant. Also, the material was checked manually before analysis. According to circumstances with covid-19, a digital survey was the only choice. In the current thesis, *Survio.com* (2020) was used to collect data and they follow laws according to GDPR. The treatment of personal data is confidential and follows EU's directive on processing of personal data *(EU) 2016/679*.

6.2 Result and the theoretical context

The results of the current thesis showed similarities with previous research, social media usage was associated with perceived stress levels among individuals, both among men and women. Women seemed to be more vulnerable to stress in relation to social media usage, and this was in line with previous research, even if the research was limited in the Swedish context. According to the theoretical framework of this thesis, *TPB* assumes that, norms, attitudes and self-control encourage the behaviour (Azjen, 1991; Azjen, 2005), and the result in the present thesis indicated that attitudes and self-control were associated with the intention in addictive tendencies of social media usage. Furthermore, the intention was

associated with perceived stress, and addictive tendencies of social media usage was associated with increased probability for perceived stress.

Azjen (1991) also stated that subjective norms are important, in this thesis, subjective norms of individuals show their life for others on social media had no significant association to addictive tendencies of social media usage. Pelling & White (2009) argues that norms of being constantly connected are another factor. In the present thesis, the index of social media usage included items such as integrate on social media, active on social media, social media usage at work, postponing household chores due to social media usage, and the number of memberships on social media. The index had an association to perceived stress levels, even if the index of social media usage were not included in the test of the theory. Brailovskia et al., (2019a) argues that individuals with higher levels of daily stress are more likely to use social media more. In the current thesis, all measures showed a positive association between social media usage and perceived stress levels. The *Poisson Regression* showed a significant association between social media usage and perceived stress levels in the total sample after adjusting for confounding factors. The direction of the association was unclear, since no causal association was measured.

Women had a stronger association between social media usage and perceived stress levels using the *Poisson Regression*, and women was seemed as more vulnerable in the context of social media usage and perceived stress. Women had stronger association than men between social media usage and perceived stress levels using the stratified *Poisson Regression*, and it corresponded to previous research. Turel et al., (2018) consider women more vulnerable to stress related to social media usage. Biological factors such as age and gender also seemed to affect an individual's intention and behaviour. Men seemed to be more likely to have addictive tendencies of social media usage, whereas age had an impact on perceived stress levels in the model examined the theory. The number of memberships of social media seemed to have an impact of which factors who encouraged addictive tendencies of social media usage. The model as examined the probability to addictive tendencies of social media usage, showed that memberships on social media affected the probability of addictive tendencies of social media usage.

Likes on social media was also factor related to addictive tendencies of social media usage. Previous studies also show that the pursuit of likes is associated with negative aspects of health (McBride, 2017). Subjective norms were not significantly associated with addictive tendencies of social media usage in this sample, but the small sample may have influenced the measurement. It contradicts McBride's (2017) statement of subjective norms, and whether individuals who want to show their life on social media are more vulnerable. Individuals with more than five memberships on social media had four times higher probability of addictive tendencies of social media usage compared to individuals with less memberships. Likes had an association to addictive tendencies of social media usage. According to the theory, these factors determine the intention. Therefore, these factors should be further investigated in order to draw conclusions regarding the risks with social media usage. Advantageously, with a larger sample, or with a longitudinal design. Individuals with addictive tendencies of social media usage had an increased probability of perceived

stress, in fact 4.7 times higher probability to perceived stressed than individuals without addictive tendencies of social media usage. However, there was a small sample and there were some problems in the definition of addictive tendencies of social media usage.

6.3 Further research and implications

Several studies have shown that social media has negative effects on the well-being among individuals. There is limited evidence in the relationship between social media usage and perceived stress, especially in the Swedish context, but more research is needed to draw further conclusions and there is more to explore to understand the full spectrum in the context of social media usage and stress. In this thesis, indications that social media usage affect the health among individuals have been found. This thesis, like several other studies, confirms that women seem to be more vulnerable than men to social media usage and perceived stress. However, men are more likely to have addictive tendencies of social media usage compared to women. This can be further explored in longitudinal studies and draw further conclusions whether social media usage at least once an hour is addictive behaviour, such a study can provide further benefits in the knowledge of social media usage and perceived stress. In the perspective of public health, knowledge of the possible effects of using social media is effective in working with adolescents, as well as adults. More research is needed, partly to establish causal relationships but also to confirm the study's results with a larger sample. Thus, if social media addiction is a disease or reduction, the behaviour should be treated in the same way as other addictive behaviours, such as gambling, alcohol use and more. Accordingly, treat addictive behaviour on social media as a risk factor.

7 CONCLUSIONS

Associations between social media usage and perceived stress levels existed, increased social media usage indicated increased levels of perceived stress, such association was also found depending on gender, and women seemed to be more vulnerable. Individuals with addictive tendencies of social media usage had an increased probability to perceived stress, and an association was found between likes, more than five memberships on social media, and addictive tendencies of social media usage.

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APPENDIX A: QUESTIONNAIRE AND INFORMATION LETTER

Information letter:

Hej!

Stress är ett växande folkhälsoproblem i Sverige, sociala medier har blivit en del i vardagen för befolkningen. Detta frågeformulär syftar till att undersöka individers sociala medievanor och stress.

Studien är ett examensarbete på avancerad nivå och är del av mastersprogrammet i folkhälsa på Mälardalens Högskola. Enkäten kommer att genomföras under våren 2020 och tar ungefär 5 minuter att genomföra. Frågorna berör din uppfattning om sociala medier, stress samt en del frågor gällande levnadsvanor. När alla frågor är besvarade glöm inte att klicka på skicka så informationen skickas in. Enkäten omfattar c: a 30 frågor med flera svarsalternativ, kryssa i den rutan du anser stämmer in bäst på dig.

I föreliggande studie kommer ingen individ kunna identifieras, de uppgifter du lämnar är konfidentiellt. Medverkan är frivillig och anonym, men svaren är viktiga för att få fram kunskap om hur stress kan förebyggas. Deltagandet är helt frivilligt och du kan när som helst avbryta din medverkan utan närmare motivering.

Svaren kommer endast användas till denna undersökning. Informationen som lämnas finns endast tillgänglig för författaren och är skyddad av lösenord. Detta är en tvärsnittsstudie, alla data samlas in vid ett tillfälle. Slutgiltig version av arbetet kommer finnas tillgänglig på Diva-portal och tillgänglig för nedladdning.

Genom att klicka på starta enkät godkänner du deltagande i studien.

Har du några frågor rörande enkäten eller undersökningen i övrigt, kontakta mig på ard16001@student.mdh.se

Allt gott!

/Andreas

Questionnaire:

1	**Är du…?**	**2**	**Är du född under…?**
	Man		50 – talet eller tidigare
	Kvinna		60 – talet
	Definierar mig varken som man eller kvinna		70 – talet
			80 – talet
			90 – talet
			00 – talet eller senare
3	**Är du eller din föräldrar födda utanför Sverige?**	**4**	**I vilken del av Sverige bor du i?**
	Ja		Södra Sverige Bohuslän, Västergötland, Halland, Småland, Kalmar län, Öland, Blekinge, Dalsland, Östergötland, Skåne och Gotland
	Nej		Mellersta Sverige Värmland, Närke, Södermanland, Västmanland, Närke, Uppland, Gästrikland, Dalarna och Västmanland
			Norra Sverige Hälsingland, Härjedalen, Medelpad, Ångermanland, Jämtland, Lappland, Västerbotten och Norrbotten
5	**Vilken typ av bostad bor du?**	**6**	**Vilken typ av utbildning har du?**
	Bostadsrätt		Grundskola
	Hyresrätt		Grundskola + gymnasiet
	Villa		Yrkeshögskoleutbildning
	Andrahandslägenhet		1–3 års universitetsstudier
	Annat		4 eller flera års universitetsutbildning
7	**Min anställning är…?**	**8**	**Jag tycker min anställning är…?**
	Heltidsanställning		Trygg
	Deltidsanställning		Ganska trygg
	Timanställd		Osäker
	Student		Har ingen anställning
	Pensionär		
	Arbetslös		
9	**Anser du att din lön räcker till varje månad?**	**10**	**Hur mycket tid ägnar du till pulshöjande aktivitet varje vecka?**
	Alltid		5 eller fler timmar
	För det mesta		3–4 timmar
	Ibland		1–2 timmar
	Aldrig		1 timme
			Ingen tid
11	**Hur ofta är du fysiskt aktiv?**	**12**	**Hur mycket tid spenderar du stillasittande varje dag?**
	Ofta		All vaken tid
	Ganska ofta		8–9 timmar
	Ibland		5–7 timmar
	Aldrig		3–4 timmar
			1–2 timmar
			Ingen tid
13	**Under den senaste månaden, hur ofta har du blivit otålig när du upplever saker gå sakta?**	**14**	**Under den senaste månaden, hur ofta har du känt dig fysiskt och psykiskt trött?**
	Ofta		Ofta
	Ganska ofta		Ganska ofta
	Ibland		Ibland
	Nästan aldrig		Nästan aldrig
	Aldrig		Aldrig

15	**Under den senaste månaden, hur ofta har du känt att du inte kunnat kontrollera viktiga saker i ditt liv?**	**16**	**Under den senaste månaden, hur ofta har du känt en tro till din förmåga att hantera personliga problem?**
	Ofta		Ofta
	Ganska ofta		Ganska ofta
	Ibland		Ibland
	Nästan aldrig		Nästan aldrig
	Aldrig		Aldrig
17	**Under den senaste månaden, hur ofta har du känt att saker har gått din väg?**	**18**	**Under den senaste månaden, hur ofta har du känt att du inte kunna klara av saker som du normalt brukar klara av?**
	Ofta		Ofta
	Ganska ofta		Ganska ofta
	Ibland		Ibland
	Nästan aldrig		Nästan aldrig
	Aldrig		Aldrig
19	**Har du en smartphone?**	**20**	**Vad använder du din smartphone till bortsett från telefonsamtal?**
	Ja		Sociala medier
	Nej		Nyheter
			App-baserade spel
			Annat
21	**Hur samlar du in samhällsinformation?**	**22**	**Hur ofta läser du nyheter digitalt?**
	Via smartphone		Minst en gång i timmen
	Via dator		Minst en gång om dagen
	Via tidningar		Minst en gång i månaden
	Via post		Mer sällan
	Annat sätt		
23	**Hur ofta är du aktiv på sociala medier?**	**24**	**Hur ofta integrerar du med andra individer på sociala medier?**
	Minst en gång i timmen		Minst en gång i timmen
	Minst en gång om dagen		Minst en gång om dagen
	Minst en gång i månaden		Minst en gång i månaden
	Mer sällan		Mer sällan
25	**Hur ofta uppdaterar du dina sociala medier?**	**26**	**Hur många sociala medieplattformar är du medlem på?**
	Dagligen		Mer än fem
	Veckovis		4–5
	2–3 gånger i månaden		2–3
	Mer sällan		1
27	**Varför använder du primärt sociala medier?**	**28**	**Påverkar likes på sociala medier dig?**
	Mina vänner och familj har sociala medier		Ja
	Behöver det i arbetet		Nej
	Vill visa mitt liv för andra		
	Avslappning		
	Annan intention		
29	**Hur ofta använder du sociala medier under arbetstid?**	**30**	**Brukar du skjuta upp hushållssysslor för att använda sociala medier?**
	Ofta		Ofta
	Ganska ofta		Ganska ofta
	Ibland		Ibland
	Aldrig		Aldrig

APPENDIX B; OVERVIEW OF STATISTICAL CONCEPTS

Statistical words used in the present study;

a: *Alpha value, test of internal constancy.*
B: *Unstandardized beta*
CI 95 %: *Confidents interval*
D: *D stands for distance and it is the value of the difference between the distribution in the selected variable and the normal distribution. D-values* from 0.05 is acceptable and confirm that the variable is normally distributed.
n: *Participants included in measure.*
OR: *Odds ratio, used in the logistic regression.*
***p*=:** *Significance level*
r: *Size of the correlation*
R_2-Adj: *Adjusted R-square value.*
S.E.: *Standard error.*
VIF: *Variance inflation factors, value between 0-10, low values are less inflation.*
zB: *Standardized b-coefficient used in Linear Regression.*
U: *The value of differences in Mann Whitney U-test*

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