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Facebook and Social Comparison

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DECLARATION: I hereby declare that no portion of the work referred to in this thesis has been submitted in support of an application of another degree, or qualification thereof, or for any other university or institute of learning. I declare that this thesis is my own independent work. All sources and literature are cited and included.

In Prague, June 28, 2018

Signature:_____

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Abstract

This paper addresses the subject of the correlative relationship between Facebook usage, life satisfaction and well-being. This topic was chosen for systematic review because of general observations of the correlation between excessive Facebook usage and heightened levels of depression and lowered levels of well-being and life satisfaction among users. The possibility that Facebook and online communication has a negative effect on users' psychological well-being would necessitate some response. It may be only one of the many technological tools that trigger and exacerbate detrimental traits and emotive reactions in users, but it is one of the most socially prominent technological forums in the 21st century, making it a significant subject of study.

The hypothesis posited in this paper is that Facebook use and negative levels of life satisfaction and well-being may be primarily mediated through social comparison and low levels of self-esteem.

The method used to test the hypothesis was a systematic review of available research as this offered the most clearly structured and analytical approach for the interpretation of results. Specific mechanisms were partially revealed in the systematic review, which showed that social comparison is indeed associated with a decrease in levels of well-being and life satisfaction, and has a greater impact on individuals whose base levels of life satisfaction, well-being and self-esteem are already low. This often causes an unhealthy self-perpetuating usage cycle in which self-esteem and levels of self-perception decrease, instigating heavier usage and more social comparison. The relationship is thus reciprocal and mutually reinforcing, although the exact correlational relation cannot be easily defined. The systematic review attempts to reveal one of the most nuanced

frameworks for engaging with Facebook, social comparison, and thus isolate an important

issue in new digital forms of socializing.

Introduction

Technological developments and innovations have been a constant in human history but recently they have been taking place at exponential speed, generating countless products that in many ways appear to make life easier than ever before. As a society, we have become increasingly dependent on these new products as well as on new technologies, but they also change our lives in unpredictable ways. Communication through language is arguably the most important and unique human value, a psychophysical capability that separates us from all other living creatures. It can thus be defined as one of the primary building blocks of society, providing the foundation upon which we stand and develop our civilizations. In the contemporary era, communication is increasingly moving into the virtual sphere of social media, and this is having an enormous impact on how we comprehend each other and our environment.

As a first step in studying the shift of communication into the virtual sphere of social media, it is necessary to understand what changes and effects such a shift brings, and what are the primary results of these effects. Of course, spheres of life and society other than communication are also heavily impacted by technology, but in this paper we will primarily focus on aspects of communication. Recently, the term "Facebook depression" is heard more and more in mass media, which can be seen as an indication of the detrimental effects of social media networking sites. However, the available empirical evidence is equivocal when surveyed as a whole. Various studies suggest a positive impact of

Facebook on psychological well-being, a non-existent relationship, or a negative relationship.[1]

In light of the equivocal results of research on this area, this paper poses the main research question explored in the paper's systematic review as follows: Is the correlation between Facebook use and lower levels of well-being and life satisfaction in any way mediated by the act of social comparison and resulting states of self-esteem, and if so, how?

The first part of the paper presents a short background about systemic changes in society that have led to an increasing emphasis on social comparison, and which are primarily the result of recent technological developments creating a vast sphere of virtual human communication. The paper goes on to define certain activities and emotional states that are frequently mentioned in the studies reviewed at the end of paper. Facebook usage is characterized in its scope and pervasiveness, and different types of usage that are commonly differentiated in the separate research papers are defined. The main part of the systematic review is the processing of generated results and a consequential discussion of these results. We reviewed the studies available on the search engine Google Scholar that dealt with Facebook and the psychological effects triggered in users. Six studies were chosen with the goal of presenting the most prevalent problematics of Facebook use, particularly focusing on the elements of social comparison and self-esteem, as well as self-presentation and type of usage. The aim of this evaluative method

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[1] Appel H., Gerlach A. L., Crusius J. (2016). The Interplay Between Facebook Use, Social Comparison, Envy and Depression, *Social Media and Application of Human Behavior*, p. 3. Retrieved from http://soco.uni-koeln.de/docs/Appel_Gerlach_Crusius_2016_COP.pdf

is to clearly represent the information found in the chosen studies and to form a consistent structure through which the results can be examined and interpreted.

Background

The subject of this paper is constituted by three main components; Facebook usage, life satisfaction and well-being, Social Comparison and self-esteem. The Background chapter of this paper will explore these components separately and in-depth.

Network Society, Facebook Usage and Impression Management

To understand Facebook usage as a phenomenon more completely, it is necessary to examine the emergence of the Network Society, differentiate active and passive Facebook usage, and examine the networking technique of impression management.

Since the development of the Internet, communication is increasingly carried out on digitalized networks, sometimes referred to collectively as the information highway. The term "information highway'" was popularized in the 1990s to describe the network of fiber-optic cables that enable the high-speed transfer of information. This new society which based its communication largely on the newly developed Internet is called the Network Society.

One of the effects of the Network Society and the usage of digital networks is that many individuals are withdrawing into their own households (generally smaller now than in the past) and participating in communities with no necessary geographic proximity. These

communities comprised of large-scale social media networks form a new area of public space.[2]

A particular way in which the new era of communication and information is distinct from the era in which mass media evolved is in its categorization of the audience. With mass media, the audience was homogeneous and received a limited amount of messages. Today there is an intense multiplicity of messages and sources, with the audience becoming more selective and segmented, and choosing the messages from a variety of sources that fit their unit and preference. This had led to the fragmentation of this new sphere of public space.

This development enhanced the individual relationship between sender and receiver.[3] It has been shown that social comparison tends to vastly increase when one is comparing with individuals from a similar environment.[4] With the emergence of the Network Society, communication experienced a segmentation on the basis of shared interests, backgrounds, or professional affiliations. Because this resulted in a tighter communicative proximity among users with similar socioeconomic statuses, users generally experienced a heightened sense of social comparison, according to the social comparison theory, which will be later examined in this paper. This may be one of the structural causes of the general decline of life satisfaction and well-being that larger numbers of individuals in contemporary society are currently experiencing. The increase in these negative psychological factors can be seen in all age ranges, but is especially prevalent among

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[2] Van Dijk, J. (2005). *The Network Society, Social Aspects of New Media*. (pp. 170). London: SAGE publishing.

[3] Castells, M. (2009). *The Rise of The Network Society* (pp.368). New Jersey; Wiley-Blackwell Publishing.

[4] Festinger L. (1954). A Theory Of Social Comparison Processes. *Human Relations, p. 2,* Retrieved from http://sci-hub.tw/10.1177/001872675400700202

adolescents, which is why most of the studies chosen investigated sections of the population that are of collage age.[5]

Today more the two billion people use Facebook. Due to its addictive qualities, screen time is increasing constantly, and a general rise in anxiety and depression has been observed among users. Researchers have begun to study the connection between the two. It should be noted that 24% of Facebook users log onto Facebook a minimum of five times per day,[6] 54% of respondents in a recent Webroot survey report some level of addiction to Facebook, and 75% of Millennials (people between the ages of 18 and 45) report that they feel addicted to Facebook.[7] In 2010, a study discovered that five times as many high school and college students were dealing with anxiety and other mental health issues as youth of the same age who were studied in the era of the Great Depression.[8] This indicates the existence of a correlative relationship between Facebook use and a decline in life satisfaction and well-being.

It is important to differentiate between two types of Facebook use; passive Facebook use, or surveillance, and active Facebook use. Active Facebook use is defined as using the site mostly for communication and participatory activities, such as posting pictures, statuses, producing content, commenting and liking. This is called generating content and is one of the main traits of social media. Passive usage on the other hand does not

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[5] Sugarman, J. (2017). The Rise of Teen Depression. *Jon Hopkins Health Review*.
Retrieved from https://www.johnshopkinshealthreview.com/issues/fall-winter-2017/articles/the-rise-of-teen-depression
[6] Remarkable Facebook Addiction Statistics. (2017, May 29th).
Retrieved from https://brandongaille.com/42-remarkable-facebook-addiction-statistics/
[7] Social Networking Habits, website removed, retrieved from
https://www.webroot.com/in/en/about/press-room/releases/social-networking-habits-webroot-research
[8] Tandoc Edson C., Ferucci P., Duffy M. (2015). Facebook use, envy, and depression among college students: Is Facebooking depressing*? Computers in Human Behavior*, pp. 1.
retrieved from
https://pdfs.semanticscholar.org/846b/59235a7b6f55728e2f308bb1f97a4a6dceba.pdf

generate content and involves the surveillance or stalking technique users employ while engaging in passive usage. They use Facebook to survey the profiles of other users, explore events, read articles and listen to music. The element of surveilling profiles of other users, which is possible to do to some extent even when the two users are not Facebook friends, is called stalking.

A study performed by Tandoc et al[9] showed that passive Facebook usage manifested negative levels of well-being when mediated by envy and low levels of self-esteem. One study often mentioned in the literature reviews is an extensive cross sectional and longitudinal experimental study led by Krasnova in 2014[10] indicating that passive usage, as opposed to active usage, is more often connected with lowered levels of life satisfaction.

In the book *Alone Together* by Sherry Turkle, one adolescent made the following comment about how it felt to surveil peers: "It's creepy because it's like listening to a conversation that you are not in, and after stalking I feel like I need to take a shower." In this work, a college freshman was quoted about her surveillance of the new "interesting people" in her college class: "I spend all nights reading peoples walls. I track their parties. I check out their girlfriends."[11] Facebook stalking is a form of social transgression that technically does not transgress since the infrastructure of Facebook enables users to

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[9] Tandoc C. E., Ferucci P., Duffy M. (2014). Facebook use, envy, and depression among college students: Is Facebooking depressing? *Computers in Human Behavior,* p. 6.
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https://www.semanticscholar.org/paper/Facebook-use%2C-envy%2C-and-depression-among-college-Is-Tandoc-Ferrucci/846b59235a7b6f55728e2f308bb1f97a4a6dceba
[10] Krasnova H. Et al. (2014). Envy on Facebook: A Hidden Threat to Users Life Satisfaction. *Institute of Information Systems,* p. 8
Retrieved from
https://www.ara.cat/2013/01/28/855594433.pdf?hash=b775840d43f9f93b7a9031449f809c388f342291
[11] Turkle, Sherry. (2011). *Alone Together* (pp. 252), New York: Basic Books

follow other people's activity. Additionally, stalking has become common enough to be incorporated into the horizon of contemporary social norms.

The design of social media encourages people to present themselves as a marketable product, in the sense that they concisely define or present their image in society, their interests, hobbies, and passions. This type of presentation is called Impression Management. Users of Facebook present themselves to a large social circle of family, friends, and acquaintances. Users strive to project a desirable self-image without relying too much on deception, as many people targeted know users personally.[12] This often leads to selective self-presentation, honest but not complete. Self-affirmation involves the act of subconsciously focusing on information in the environment such as social roles, meaningful personal relationships, and values. This satisfies the fundamental human need to remind ourselves of who we are, our self-worth, what makes us valuable, and what is important to us.

The result of impression management on social media is that users who subconsciously compare themselves with other Facebook users encounter a distorted web of peers, a network of profiles that cause users to engage in social comparison.

Mental Health, Well-being and Life Satisfaction

The hypothesis proposed is that Facebook use and lower levels of life-satisfaction and well-being are mediated by the act of social comparison on Facebook and specifically

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[12] Toma L. Catalina (2013), Feeling Better But Doing Worse: Effects of Facebook Self-Presentation on Implicit Self-Esteem and Cognitive Task Performance, p. 3, Media Psychology,
retrieved from
https://www.researchgate.net/publication/262873576_Feeling_Better_But_Doing_Worse_Effects_of_Facebook_Self-Presentation_on_Implicit_Self-Esteem_and_Cognitive_Task_Performance

levels of self-esteem. To understand this, it is necessary to define well-being and life satisfaction.

Subjective well-being is defined as a person's cognitive and affective evaluations of his or her life. Subjective well-being is a difficult term to define but is often understood in the context of mental health. Mental health is considered to be a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community.[13] Subjective well-being has three major indicators; life satisfaction, positive affect, and negative affect. For this reason, there are multiple ways that mental health and well-being are measured.

Much used multi-item scales are the Positive and Negative Affect Schedule (PANAS) scales and the Satisfaction With Life Scale. The former provides a list of feelings and emotions with respondents asked to indicate the extent to which they felt a given way during a given period.[14] The Positive and Negative Affects Schedule measure moods while the Satisfaction With Life Scale measures one's life satisfaction. Life satisfaction is characterized, in agreement with the cognitive theory, as "individual's cognitive judgment

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[13] /.(2014)Mental Health: A state of well-being. *World Health Organization*.
Retrieved from

https://www.who.int/features/factfiles/mental_health/en/

[14] R. Prasoon, R Chaturvedi. (2016) Life satisfaction: A Literature review. *The Researcher- International Journal of Management Humanities and Social Sciences, p. 3.*
Retrieved from

http://theresearcherjournal.org/pdfs/01021220163.pdf

about comparisons based on the compatibility of their own living conditions with the standards".[15]

Positive and negative affects, as well as life satisfaction, are dimensions of subjective well-being. These dimensions are considered to be facets of mental health. Facebook usage has consistently been correlated with negative mental health and its multiple facets in various cross-sectional studies.[16]

Self-Esteem and Self-Perception

Self-perception is formed during the process of cognitive and social development. We build our identity through our experiences, relationships, interactions and how we interpret cues from our social environment. Self-perception allows one to form a view of oneself in reference to others. Self-perception is influenced by other factors in one's life such as family, cultural background, personal history, external beauty and appearance, school and peer group.

Unlike self-perception which was considered to be the cognitive dimension of self, self-esteem is the emotional dimension of self-awareness. It is associated with the overall positive evaluation of a person's sense of self-worth and self-respect and refers to one's belief of being competent in coping with the basic challenges of life and being worthy of

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[15] et al. p 2.

[16] F. Grant, C. Guille, S. Sen. (2013) Well-Being and Risk of Depression under Stress. *PLOS One.* Retrieved from
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3698120/

happiness. Self-esteem is not identical to self-perception, but consists of additional

mental constructions.[17]

Self-esteem is both a fluid trait, responding to daily events and contexts, and a stable trait

that has been constructed over time.[18] It is a result of the process of self-evaluation and

self-perception over time. Self-perception can be evaluated in multiple ways; self-

perceived social competence and self-perceived physical attraction are two of the ways

in which it was evaluated in this paper.

The chronic or temporary exposure to primarily upward social comparison information on

social media can have a deleterious impact on users' self-perception and self-esteem.

Self-esteem has often been proven to be a predictor of envy manifestation and self-

esteem and envy manifestation have been shown to constitute a cycle, in which low self-

esteem causes manifestations of envy that additionally cause an additional lowering of

self-esteem.[19] This a self-perpetuating and negative cycle.

The term "Facebook envy" has been coined in response to the reported increase in envy

based on the consumption of other people's content on Facebook. Facebook envy has

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[17] E. Dimitriou-Christidi (2010). The Self-perception and self-esteem of school Graduets. p. 2,

Retrieved from

http://www.eur-alpha.eu/IMG/pdf/the_self-perception_and_self-esteem_of_second_chance_school_graduates.pdf

[18] Vogel E., Rose P. J., Roberts L. (2014). Social comparison, social media, and self-esteem. *American Psychological Association*, p. 3,
Retrieved from
https://www.researchgate.net/publication/275507421_Social_comparison_social_media_and_self-esteem
[19] Barth, F. D. (1988). The Role of Self-Esteem in the Experience of Envy. *The American Journal of Psychoanalysis.*
Retrieved from
http://sci-hub.tw/http://dx.doi.org/10.1007/BF01252843

been found to lead to decreased life satisfaction and, over extended periods of time, to a chronic focus on social inferiority, which may in turn lead to depression.[20]

Interestingly, envy is found to be most commonly manifested when we compare ourselves to someone in a similar age, gender, and general socio-economic background. The majority of Facebook friends are actual friends or distant acquaintances and therefore in similar age, gender, and general socio-economic categories, and this represents another structural and objective element that causes social comparison to be a deeply entrenched side-effect of Facebook use. Those who compare favorably on important dimensions are likely to experience positive moods, a heightened sense of their ability to achieve personal goals, and an improved sense of global self-esteem, whereas those who compare unfavorably are more apt to experience negative moods, a diminished sense of ability, and a diminished sense of self-worth.[21]

Social Comparison Theory, Social Risk Hypothesis and Social Comparison Orientation

The correlational relationship between Facebook use and lower levels of life satisfaction and well-being as mediated by social comparison and lower levels of self-esteem will be examined in this paper through the framework of the Social Comparison Theory and the

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[20] Tandoc Edson C., Ferucci P., Duffy M. (2015). Facebook use, envy, and depression among college students: Is Facebooking depressing*? Computers in Human Behavior*, p. 3,
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https://pdfs.semanticscholar.org/846b/59235a7b6f55728e2f308bb1f97a4a6dceba.pdf
[21] Krasnova H., Wenninger H., Widjaja T., Buxmann P. (2014). Envy on Facebook: A Hidden Threat to Users Life Satisfaction? *Institute of Information Systems*, p. 2,
Retrieved from
https://www.semanticscholar.org/paper/Envy-on-Facebook%3A-A-Hidden-Threat-to-Users'-Life-Krasnova-Wenninger/b775840d43f9f93b7a9031449f809c388f342291

Social Risk Hypothesis. The Social Comparison Theory was developed by Leon Festinger, while the Social Risk Hypothesis was developed by C. R. Blease.

These structures delineate the connection between social rank, social comparison and social comparison orientation (SCO) as well as expand on their connection with mild depressive symptomologies from an evolutionary perspective.

Leon Festinger is a social psychologist who developed the Social Comparison Theory, and all of the studies that are included in this systematic review include his initial research. Festinger explored how individuals compare their opinions and abilities for the purpose of self-evaluation within group contexts. His primary hypothesis is that an evolutionary drive exists within the human organism to evaluate oneself and to develop an accurate appraisal of one's opinions and abilities by employing social comparison. Evolutionarily, incorrect and inaccurate appraisals of one's abilities can be punished, and may even be fatal in certain situations.[22]

To the extent that objective, non-social means are not available for comparison of abilities, people evaluate their abilities by comparison with others in a subjective manner that results in the development of an opinion. The tendency to compare oneself to others decreases as the difference between the targets opinion or ability and one's own increases.[23] Hence, people tend to compare themselves with people who are similar in terms of background, age, predispositions, and a wide bracket of abilities and opinions. In the case of online social networks, the tendency for this type of comparison is high since most friends and acquaintances have similar socio-economic backgrounds. There

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[22] Festinger L. (1954). A Theory Of Social Comparison Processes. *Human Relations, p. 2.*
Retrieved from
http://sci-hub.tw/10.1177/001872675400700202
[23] Ibid. p. 4

are two types of social comparison: upward or negative (comparing oneself with someone in a higher perceived social position then oneself) and downward and positive (comparing oneself with someone in a lower perceived social position then oneself). Social influence processes and various kinds of competitive behavior are both manifestations of socio-psychological processes that can be viewed in a similar fashion to social comparison on a conceptual level, in that both stem from the drive for self-evaluation on the basis of comparison with others, a drive which is evolutionarily necessary. Despite the ubiquity of comparison, some findings suggest that comparison can vary across individuals and situations. For one, people appear to differ in their SCO, that is, in the frequency with which they seek, and the importance they attribute to, information about how others are doing in a particular domain. [24] This tendency is called Social Comparison Orientation.

C. R. Blease put forward the hypothesis that the persistent perception of being outnumbered by high status individuals will elicit an involuntary and self-protective response of depressive cognition and behavior. It is the overstimulation of such high status cues in the modern environment that may cause depressive responses.

Unfavorable comparison of one's abilities or opinions with others who are similar to oneself may result in mild depression. Mildly depressive cognition and behavior is thus an adaptive functional response to perceptions of low relative social value.[25] In the

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[24] M. Baldwin, T. Mussweiler. (2017) The Culture of Social Comparison. *PANAS, p. 2.*
Retrieved from
https://www.pnas.org/content/115/39/E9067

[25] Blease C. R. (2015). Too Many 'Friends,' Too Few 'Likes'? Evolutionary Psychology and 'Facebook Depression'. *American Psychological Association*, p.1.

modern context, depression can also be seen as an adaptive reaction to an environment that does not fully fit one's expectation of a fulfilling social environment.[26]

The Social Risk Hypothesis proposes that depression promotes two functions: it enables individuals who are presented with complex and difficult social situations time to ruminate and problem-solve, and also send out a cry for help and induce other to provide them with needed investment and resource allocation.[27]

In contemporary society, prestige has largely replaced dominance as an indicator of social ranking and self-esteem has evolved from mechanisms that were once adapted to solve psychical conflicts. The social risk hypothesis of depression proposes that mild depression is an adaptive response that evolved to create risk aversive behavior in social contexts by triggering a certain suite of depressive functions in threatening situations. These functions include hypersensitivity to the social status of others, reducing expectations of success, and sending signals of low relative self-value to others.

As a result of this theory, it can be maintained that mild depression is a functional response to perceptions of comparative low social value, and that Facebook is a forum that abounds in triggering cues which habitually elicit feelings of low relative social value from users.[28] Even just general Internet activity in amounts above the societal norm has been shown to lead to lowered levels of well-being and mild depression.[29]

Retrieved from https://www.apa.org/pubs/journals/features/gpr-gpr0000030.pdf
[27]Ibid. p. 5
[28] Ilbid p. 7
[29] Ibid. p. 4

Objective and Hypothetical Model

The aim of this review is to evaluate, analyze, and synthesize the available research literature in order to examine the correlational connection between Facebook use and decreased life satisfaction or mild depression, mediated by social comparison.

The systematic review of studies that were deemed relevant for inclusion in this paper was chosen as the most suitable method of analysis because it provides a structure in which we could efficiently evaluate and summarize the findings of the most relevant individual studies and, when appropriate, combine the results of several studies to provide more reliable results. The systematic review is considered the gold standard of reviews because of its explicit, pre-specified, and reproducible methods, which are used to systematically search all sources and to critically appraise, summarize, and synthesize research findings to deal with and address a specific question.[30]

The six research studies that will be presented in this review address different aspects of Facebook use that have some connection to social comparison, self-esteem, and life satisfaction. A general hypothesis was predicted, evidence for which emerged from all the studies and their results. The hypothesis is formulated as follows; the relationship between Facebook use and lower levels of life satisfaction and well-being is mediated by the act of social comparison on Facebook and specifically by levels of self-esteem.

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[30] Perestelo-Perez L. (2013). Standards on how to develop and report systematic reviews in Psychology and Health. *International Journal of Clinical and Health Psychology*, p. 6.
Retrieved from
https://www.sciencedirect.com/science/article/pii/S1697260013700073

Methods

Search Strategy and Data Extraction

The first step in the systematic review was selection of relevant studies, beginning with a preliminary review of the articles available on the search engine Google Scholar published between the years 2014 and 2018. Three separate manual searches were performed on Google Scholar using three variations of search terms: Facebook and social comparison, Facebook, social comparison and self-esteem, and Facebook, social comparison and life satisfaction. The first ten pages of generated sites were reviewed for each of these combinations and studies that were deemed relevant based on their title were compiled into a list. Duplicates were eliminated and the abstracts were reviewed. Additional studies were eliminated when deemed appropriate as a result of the inclusion and exclusion standards. The studies that remained in the pool were read in full and an additional selection process was applied to finalize the sample to be reviewed. The search terms were selected to capture the specific area of interest of the systematic review.

The year of the study, population of interest and variables used (social comparison, depression, well-being, self-esteem…) were noted for each selected study, along with whether any formal mediators or moderators of these relationships were indicated. Information was then qualitatively synthesized to identify common themes.

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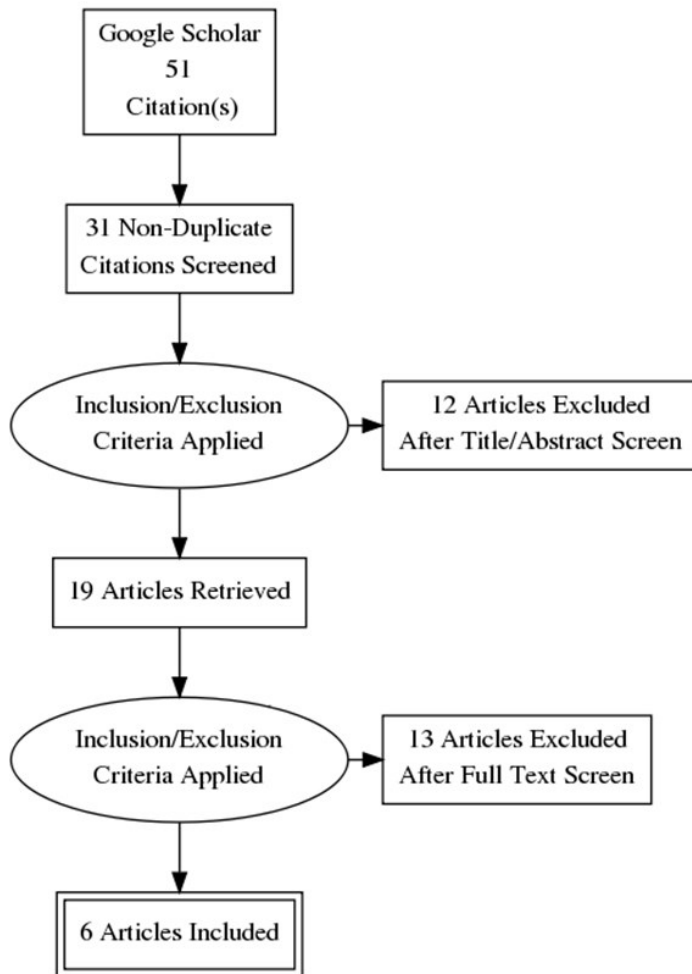
Selection of Studies

Standards of inclusion (and exclusion) were defined during the preliminary literature review. The defined inclusion standards are as follows: studies concluded in the time frame between 2014 and 2018; quantitative studies using quasi-experimental, experimental, or cross-sectional analysis, relevance of results and the limitations of specific studies acknowledged. It was required that studies include aspects of social comparison and dealt specifically with Facebook. It was required that at least one research question in the study dealt specifically with social comparison. Studies conducted before 2014 were not included because of the amount of changes in the

Facebook website infrastructure introduced after 2014 that resulted in it being more addictive, used on a wider and deeper scale and among a larger and more diverse population of users. Some of these changes included users' increased control over newsfeed, more buying options on Facebook, support for GIFs, the appearance of instant articles, the possibility of adding stories to the newsfeed, etc..[31] All of these developments made Facebook an even more immersive medium and a medium that extended into a wider spectrum of other activities (shopping, education, having "fun" with friends…). These developments led to an increase from 1.37 billion global users of Facebook in 2014 to 2.27 billion in 2018.[32]

Standards of exclusion were defined as follows: research older the 2014, qualitative studies, abstracts only, theses, diary studies, books and non-empirical articles, and studies that dealt with multiple social media sites and compared them between each other (ie. studies that compared the effects Twitter and Instagram use, respectively). Many studies that seemed to deal with social comparison and self-esteem were discovered upon closer inspection to be dedicated to a narrow exploration of types of envy manifestation, reasons for social comparison (material or travel experiences), addictive behavior, or exploration of tie strength and self-objectification, aspects not addressed in this paper. Studies dealing predominantly with tie strength, body shame, neuroticism, or anxiety were excluded. These phenomena are also associated with Facebook use, but point away from the research question of this systematic review.

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[31]/(2018). Facebook Newsfeed Algorithm History. *Wallaromedia.*
Retrieved from
 https://wallaroomedia.com/facebook-newsfeed-algorithm-history/#five
32. (2018). Number of monthly active Facebook users worldwide as of 3rd quarter 2018 (in millions). *The Statistics Portal.* Retrieved from
https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/

Quality control standards drawn from *The Guide for Selecting Studies for a Systematic Review* by Timothy Meline of the University of Texas were applied in order to assess the quality of the results. The following standards from Meline's chapter on appropriately employed methodology were employed to verify the quality of the research: the sample size was justified and described including a description of withdrawals and dropouts; the objectives of the study were clearly described along with intervention tactics; there was at least one control/comparison group (although this criteria was not applied consistently to all the studies, because strict application would have produced an amount of studies too small for a systematic review); the method of statistical analysis was explained and applied.[33]

Various psychometric scales were applied in the majority of the studies, and the reliability and validity of these were evaluated throughout the process of quality control. For a study to be included in the systematic review, the majority of the applied inclusion standards had to be met, although not necessarily all. Gray literature, commentary and editorial, qualitative research, literature reviews, descriptive cases, and diary studies were excluded.

Data Analysis

The individual papers selected for inclusion in the systematic review were qualitatively and critically reviewed using evaluative criteria in order to determine the significance, validity, and value of the research findings. The AMSTAR scale (Assessment of Multiple

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[33]. Meline T. (2006). Selecting Studies for Systematic Review: Inclusion and Exclusion Criteria. *Contemporary Issues in Communication Sciences and Disorders.* Retrieved from https://pdfs.semanticscholar.org/a6b4/d6d01bd19a67e794db4b70207a45d47d82f3.pdf

Systematic Reviews) is considered to be the most useful tool of evaluative criteria for the systematic review of qualitative and quantitative studies. In addition, this paper employs criteria published by the Critical Appraisal Skills Program (CASP UK) that represent widely accepted standards used for the evaluation of qualitative and quantitative studies.[34] Both of these scales were applied to ensure the coherency and consistency of the systematic review. These scales also provided necessary critical distance to appropriately implement the selected standards in the development of the review.

The STROBE standards checklist was used as the model to evaluate individual studies. This was combined with the above-mentioned guidelines drawn from Meline used for the inclusion standards of the studies. The STROBE standards comprise a checklist developed to precisely evaluate epidemiological studies. The evaluation questions are divided into four groups according to the most common organization and presentation of studies; Introduction, Methods, Results, Discussion. The following is a checklist used to describe and evaluate the individual studies divided into these four subcategories, according to STROBE standards:

Introduction:
- Explanation of scientific background and rationale for the study being reported.

- Statement of specific objectives including any pre-specified hypotheses

Methods:
- Presentation of key elements of study design early in the paper.

- In the case of an experimental studies all the outcomes and exposures must be defined

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[34] Noble H., Smith J. (2018). *Reviewing the literature: choosing a review design.* Retrieved from https://ebn.bmj.com/content/early/2018/03/13/eb-2018-102895

- In the case of a cross-sectional studies the two independent variables and measures must be defined

- Size of study and reason for sample size.

Results:

- Outcomes defined clearly

Discussion:
- Summary of key results with reference to study objectives.

- Interpretation of results in terms of the objectives, limitations, multiple possible analyses, results from similar studies, and other relevant information.

Results

1. Facebook and Self-Perception: Individual Susceptibility to Negative Social Comparison on Facebook, 2015

Dian A. de Vries , Rinaldo Kühne

This is a cross-sectional study using the correlational approach and regressing for two factors to control for the validity of results, which were age and nationality.

This study is divided into two parts. The first part explores the connection between Facebook use and self-perception, as well as general social comparison on Facebook with an emphasis on negative social comparison. The second part of the study explores an important correlational issue, testing whether the degree of life satisfaction of users mediates the indirect negative effects of Facebook use on self-perception.

In this study, the scientific background, literature review, and rationale description is brief, rushed, and lacks sufficient detail. Although the objectives and reasons for the study are vaguely defined, the hypothesis is clear: heavier Facebook use provides access to a

substantial amount of information which in turn leads to a substantial amount of social comparison that negatively effects users' self-perception in the areas of social competence and physical attractiveness, both of which are strongly associated with life satisfaction.

The development of the sample and its final size was accurately described and the methodology is clear. The final size was 231 young adults, from the ages of 18 to 25. The measures employed in the study were Facebook use, negative social comparison on Facebook and levels of self-perception. Facebook use is the independent variable, negative social comparison was included as a mediator and self-perceived social competence and self-perceived social physical attractiveness were included as dependent variables. Negative social comparison and self-perceived social competence and physical attractiveness were regressed on age, gender, life satisfaction and two nationality dummies to control for the effect of these covariates.[35] All of the measures were gathered through self-evaluating psychometric surveys filled in by the participants, and all of the surveys had been previously used or tested. One of the employed surveys had been minimally adapted from a previously validated scale.

The results confirmed the hypothesis and revealed a number of interesting correlations. The relationship between Facebook use and negative self-perception was fully mediated by upwards (negative) social comparison.[36] Self-perceived social competence and self-

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[35] D. de Vries, K. Rinaldo. (2015). Facebook and self-perception: Individual susceptibility to negative social comparison on Facebook. *Personality and Individual Differences*, p. 3.
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https://www.sciencedirect.com/science/article/pii/S0191886915003682

[36] Lbid. p. 4

perceived physical attractiveness were found to be positively associated with each other. Levels of life satisfaction were found to be significantly associated with both. When high levels were reported for the two traits, the negative indirect relationship between Facebook use and levels of life satisfaction was much weaker. In terms of covariants, age had a significant effect on self-perceived social competence and physical attractiveness.[37] The summary measures were all reported in the study. The study concluded that Facebook use may negatively impact the well-being of young people by stimulating negative social comparison and fostering negative self-perception, especially among young adults who were already unhappy.

The limitations of the study were recognized but were too broad. The conclusion emphasized the uncertainty of the results due to the cross-sectional nature of the study and the possible existence of tertiary factors.

2. Who compares and despairs? The effect of social comparison orientation on social media use and its outcomes, 2015

Erin A. Vogel , Jason P. Rose, Bradley M. Okdie, Katheryn Eckles , Brittany Franz

This study explored the connection between Facebook use and social comparison on social media. The research paper had two parts. The first is a cross-sectional study and the second an experimental study. One of the new elements introduced in this study was Social Comparison Orientation (SCO). SCO is an element of personality that indicates how likely an individual is to compare oneself to others and can influence how individuals

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[37] Ibid. p. 5

use social media sites. The researchers attempted to clarify how usage pattern differs between those with high SCO and those with low SCO, in terms of the amount and intensity of time spent on Facebook, effected users' self-perception, self-esteem and mood levels. These were the measures used.

The evaluation of the two separate methods in question are set up in a clear and precise fashion. The first part of the study was conducted in two versions among college students in order to replicate found results. The sample sizes used for the second part of the study were of appropriate sizes but there is no description of the sample development process and no reasons are described as to why the sample size varied from minimally 120 participants to maximally 275. There were five self-evaluating psycho-metric scales used to evaluate self-esteem, self-perception, frequency and intensity of Facebook use, mood affects shown in positive and negative affect schedule and SCO, which had all been previously used and validated .[38]

The first study uses the chi-square test for dependence hypothesizing that users with high SCO tend to be heavier users, spending a greater amount of time on Facebook and showing a higher intensity of usage. The hypothesis is confirmed. Having established in the first part of the study that Facebook use tends to be heavier among those users with high SCO, the goal of the second, experimental part of the study was to examine whether the consequences of Facebook use for self-perception and affect differ among those users with high SCO and those with low SCO.

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[38] E. A. Vogel *et al.* (2015). Who Compares and Despairs? The Effect of Social Comparison Orientation on Social Media Use and Its Outcomes. *Personality and Individual Differences.* p.1,
Retrieved from
 https://www.semanticscholar.org/paper/Who-compares-and-despairs-The-effect-of-social-on-Vogel-Rose/54ce71aa719f7c8c55e37d36877275bdecc9c66a

The second, experimental part of the study dealt with the effects of passive or comparison-based use on users.

The goal was to examine whether the consequences of Facebook use on self-evaluation differ in users with high SCO in comparison to users with low SCO. The hypothesis is that comparison activities originating from passive Facebook use influence negative moods, lower levels of self-esteem and self-perception and that users with high SCO are more sensitive to them.

The process of the second experiment was adequately described, although the description of sample development was not detailed enough. There were two control groups, and measures were employed to ensure that all three of the groups actually performed what they were instructed to do. One control group scrolled telephone user reviews and the other control group scrolled their own profile for the duration of the experiment. The target group was instructed to scroll profiles of acquaintances. The measures were levels of SCO, self-perception, and self-esteem. The outcomes were clearly defined. The dependent variables were trait self-perception, state self-esteem and affect balance which were submitted to a hierarchical regression analysis and regressed onto SCO as the independent variable. There was no effect modifier outlined.

The results showed that users with high SCO had lower levels of trait self-perception and self-esteem in the group that was instructed to browse acquaintances' profiles. The control groups showed no such correlations.[39]

The results also showed that the mood levels were more affected in the cases of users with high SCO, who participated in the experimental group instructed to survey their Facebook newsfeeds. A consistently lowered positive affect balance was seen in the users with high SCO in comparison with the users with low SCO. The control groups were found to have a similar level of affect balance in both users with high SCO and users with low SCO. This shows that users with high SCO will have a lowered positive affect balance when using Facebook in a passive manner, and will not have lowered positive affects when using Facebook to scroll their own profile or while generally using the internet. [40]

Essentially, SCO is a clear predicter in how engaging in social media will influence your affect balance, self-esteem and self-perception while engaging in online activities that put you in the position of negatively comparing yourself to others like passive Facebook usage. Users with high SCO tend to use social media more often and more intensely.

The limitations outlined in the concluding part of the study were exhaustive, logical and outlined almost all of the alternative scenarios that could be responsible for the results. Results from similar studies were mentioned and this section of the research paper was in fact strongest and most precise.

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[40] Ibid. p. 6

3. Social Comparison on Facebook: Antecedents and Psychological Outcomes, 2016

Kyungeun Jang, Namkee Park, Hayeon Song

This is a more complex study then the previous studies. It explores antecedents to social comparison on Facebook and posits multiple hypotheses. The goal of the study is primarily to suggest a path model between Facebook use, social comparison, and psychological outcomes using the technique of correlational analysis. Self-esteem and impression management are two factors that are focused on as possible predictors of social comparison.

The sample size development is adequately described and consist of 313 college students. This is an appropriately large sample size for such a complex research study. The introduction is not very comprehensive. Structural equation modeling was used to find the highest correlations between the separate measures.

The six measures consisted of; Facebook use, SCO, perceived social support, mental health, self-esteem and impression management. The survey was conducted fully online and consisted of different self-evaluative psycho-metric scales to quantify the measures used. All of the scales had been previously used and verified except for the survey designed to measure Facebook use.

94.6% of users reported that they engaged in more passive use than active use.[41] A structural equation model was used to combine all the results of the self-evaluative

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[41] K. Yang, N. Park, H. Song. (2016). Social comparison on Facebook: Its antecedes and psychological outcomes. *Computers in Human Behavior,* pp. 5,

surveys. The results showed that higher levels of Facebook use caused more social comparison, with a higher SCO in users being associated with a deterioration in users' mental health. Those with higher levels self-esteem are less likely to be affected by social comparison, while those with lower levels of self-esteem are more likely to be affected by social comparison. Individuals who are more concerned about impression management are much more likely to engage in social comparison. In addition, Facebook use was found to be positively associated with perceived social support. This association demonstrates that there is no direct connection between Facebook and lowered levels of self-esteem, but rather that the specific behavior of social comparison on Facebook is detrimental to self-esteem.[42] In other words, individuals with low self-esteem are more likely to feel hurt through social comparison on Facebook, whereas those with high self-esteem are less likely to engage in social comparison on Facebook. Because those with high self-esteem engage in less social comparison, they are less exposed to detrimental effects on self-esteem. Given the finding that social comparison was negatively associated with mental health, it can be inferred that Facebook use itself may not be influential enough to affect one's overall mental health. The specific behavior of social

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https://www.researchgate.net/publication/300005242_Social_comparison_on_Facebook_Its_antecedents

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XXX&enrichSource=Y292ZXJQYWdlOzMwMDAwNTI0MjtBUzo1OTU2MDUxOTM3NzMwNTZAMTUxOT

AxNDc1MjMyMyNA%3D%3D&el=1_x_3&_esc=publicationCoverPdf

[42] Ibid. pp. 7-8

comparison which takes place on Facebook, however, is likely to have detrimental effects on levels of self-esteem.

Facebook use is associated with higher levels of social comparison and higher levels of social comparison are associated with lower levels of mental health. Thus social comparison mediates the association between mental health and Facebook use. Individuals with low self-esteem are more prone to upward social comparison which leads to the increase of unfavorable feelings. [43]

This study came to the conclusion that Facebook use in itself may not be influential enough to effect one's overall mental health status while a specific type of social comparison (upward) effects mental health negatively. The limitations were acknowledged. The discussion section of this study was carried out well with the exception of not referencing other studies while summarizing the results.

4. How do people compare themselves with others on social network sites?:

The case of Facebook, 2014

Sang Yup Lee

This is a study conducted among American undergraduates. There were no general hypothesis proposed but two main research questions were developed concerning the relationship between Facebook use and the frequency of social comparison on Facebook, and the relationship between social comparison and Facebook and negative levels of life

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[43] Ibid. p. 3

satisfaction and well-being. The evaluation of this review will focus specifically on the second question of the study.

The first part of the study tries to examine the possibility that users with certain personality traits trigger higher SCO on Facebook by testing each of the following measures as being positively related to the frequency with which users engage in social comparison on Facebook; a person's self-uncertainty, self-consciousness and the degree to which the users feel like others should respond to their postings. The background and rationale are sufficiently introduced but the objectives are not specified in a clear fashion.

The sub-section focused on in this review specifies the relationship between a person's social comparison frequency on Facebook and the frequency of having negative feelings from said comparison. The measures for this cross-sectional approach were frequency of social comparison on Facebook, frequency of having negative feelings as a consequence of comparison on Facebook, number of friends on Facebook, Facebook use intensity, degree of SCO and the individual personality characteristics previously outlined.

The method section was sparse. There were 199 college students who were given online surveys to evaluate the measures. The sample size and development description were appropriate. The inadequately described self-evaluative psychometric scales were all specified as having been previously evaluated. The method was described in the actual results section and consisted of obtaining the correlation coefficient values and using the method of multiple regression analysis to combine the results. [44]

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[44] S. Y. Lee. (2014). How do people compare themselves with others on social network sites?: The case of Facebook. *Computers in Human,* p. 5

The results show a number of correlations. A person's SCO and amount of general Facebook use are both positively correlated with social comparison frequency on Facebook. Self-esteem was found to be negatively tied with social comparison frequency on Facebook. The study's conclusion finds an intrinsic relationship between the frequency with which a user engages in social comparison on Facebook and the emergence of negative feelings in said user. Thus lower levels of self-esteem are correlated with higher social comparison frequency indicating a heightened amount of negative feelings as a consequence.[45]

There was essentially no references to results from similar studies in the research paper. The limitations discussed in the actual research paper did not significantly acknowledge the non-linear and thick narrative of the research paper. This research paper outlines many intriguing questions but should have been more clearly divided into multiple sections.

5. Seeing Everyone Elses Highlight Reels; How Facebook Usage is Linked to Depressive Symptoms, 2014
Mai-Ly N. Steers, Robert E. Wickham, Linda K. Acitelli
This study was divided into two parts with the second one being a diary study, which we will disregard, as diary studies were one type of study excluded according to the exclusion criteria. The first part of this study is included in this review based on its clear accordance

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https://www.sciencedirect.com/science/article/pii/S074756321300451

[45] Ibid.5

with this systematic review's research question. The sociological and psychological background is adequate while the overview of current research is slightly lacking in content. The sample size consist of 180 students. The sample development is outlined well, though certain limitations are clearly revealed; participants with no Facebook account are grouped into the control group of low intensity users and there is a massive gender imbalance. This might have effected the unusually lopsided results. This key elements are introduced relatively early on but the procedure and methodology section is too short. The measures for the first study are social comparison, depressive symptomology and time spent on Facebook. The results showed that social comparison was indeed a mediator between time on Facebook and depressive symptologies. The surprising result in this analysis was that men were shown to be more affected by social comparison in contrast to women after the bootstrapping analysis. This is one of the few studies that showed this result and was also negated in the following diary study.[46] The general results of the research question was that any sort of interaction and usage on Facebook provided users with the opportunity to engage in social comparison, which negatively impacted users' life satisfaction. Limitations were acknowledged to a certain degree, though not the ones specified in this review.

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[46]M. N. Steers, R. Wicham, L. Acitelli. (2014). Seeing Everyone Elses Highlight Reels: How Facebook Usage is Linekd to Depressive Symptoms. Journal of Social and Clinical Psychology, p. 4
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https://www.sciencedaily.com/releases/2015/04/150406144600.htm

6. *"Harder, Better, Faster, Stronger": Negative Comparison on Facebook and Adolescents' Life Satisfaction Are Reciprocally Related, 2016*

Eline Frison, Steven Eggermont

This research uses the experimental approach and field methods. It primarily explores the relationship between well-being and negative comparison on Facebook. This research is based within the social comparison theory but also incorporates selective exposure theory which implies that users with poor well-being will be especially attracted to negative comparison on Facebook. The objectives and key elements were stated early in the paper and all the exposures were outlined. This is the only longitudinal experimental study included and it uses a 6-month time lag. This adds value to its results. The sample size consists of 1840 adolescents and it was appropriately developed and equally divided between the genders.

The measures were social media use, negative comparison on Facebook and life satisfaction. The results were achieved by previously validated self-evaluative scales via paper and pencil questionnaires. The covariates and the methodological analysis were appropriately described in detail. Age and gender were controlled for. The method used was the collection of results of students from different schools in Flanders at two different points in time. The two different pools of results were then compared using structural equation modeling and a maximum likelihood method. Two hypotheses were posited; that negative social comparison on Facebook predicts lower levels of life satisfaction, and that lower levels of life satisfaction predict negative social comparison on Facebook. The study thus explores one possible causal pathway and its reverse causal pathway. This is an

extremely important study for answering the research question of this systematic review since it is the only one that attempts to outline the causal factors and isolate the association between negative comparison and life satisfaction.

The study showed that negative online comparison did indeed decrease individuals' well-being, and that users who are already dissatisfied with their life in an offline context are more likely to engage in negative social comparison on Facebook.[47] Similarly, negative life satisfaction predicted negative social comparison on Facebook. This implies a cyclical element and the presence of a reciprocal relationship between negative life satisfaction and negative social comparison on Facebook. The limitations were noted and the possible limits to the derivation of causal inferences is pointed out despite it being an experimental longitudinal study.

Discussion

All of the studies combined evaluated the reports of two thousand nine-hundred students from multiple nationalities including American, Bulgarian, Dutch, South Korean and Greek.

The six studies isolated in this systematic review all dealt with social comparison to some degree. All but one of the studies employed the cross-sectional study design. One study employed the longitudinal design (*Frison).* One of the cross-sectional studies (*Vogel*)

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[47] E. Frisson, S. Eggermont. (2016). ''Harder, Better, Faster, Stronger'':
Negative Comparison on Facebook and Adolescents' Life Satisfaction Are Reciprocally Related, Cyberpsychology, Behavior and Social Networking, p. 4

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https://www.semanticscholar.org/paper/%22Harder%2C-Better%2C-Faster%2C-Stronger%22%3A-Negative-on-and-Frison-Eggermont/d4e0141acb961e9cc010b2311972e8749ca81602

incorporated an additional section in which the experimental design was used, which gives its results more validity. All of the studies used the correlational approach. The measures, study designs and sample sized are shown in *Table 1*.

The introduction presented a broad picture of the emotions and personality traits that the studies addressed as variables, and were, for the purposes of this paper, presented in such a way as to accommodate the variety of measures and approaches chosen by the researchers. The groupings will be yet again represented to show what the logical progression of the reviews process is. As a representation of mental health we included subjective well-being, which encompasses life satisfaction and mood affects. Depressive symptoms are also included as a result of negative mental health.

Certain associations were shown in the compiled results. Our hypothesis that Facebook use and lower levels of well-being and life satisfaction are mediated by the act of social comparison on Facebook, especially by low levels of self-esteem, was not strictly confirmed, since the direction of the linear pathway was not absolutely confirmed. The association between these elements is certainly present but the results indicate that they are reciprocal. SCO and social comparison were associated with well-being and life satisfaction in all of the studies, but an additional important element of Facebook use intensity appeared. SCO as the mediator was confirmed directly in two studies (*De Vries, Steers*). In the remaining studies it was associated with well-being and life satisfaction but was not tested in the direct role of a mediator.

None of the studies found a direct association of Facebook usage and mental health but all six of them found social comparison or SCO to be strongly associated with negative

well-being, life satisfaction or negative affects. These results confirm the Social Risk Hypothesis proposed by C. R. Blease who proposed that a consistent feeling of being outranked by high-status individuals will cause mild depression as an evolutionary reaction. The exposure of social comparison as a mediating factor appears to be in line with the Social Risk Hypothesis, which claims depressive symptomologies emerge in individuals when they are confronted with socially unfavorable situations (*De Vries, Vogel, Park, Steers*). The propensity toward SCO and social comparison, especially negative social comparison, has a strong negative effect on individuals' well-being and life satisfaction as a result of individuals feeling outranked.

Negative social comparison was specifically measured in three of the studies (*De Vries, Park, Frison*). Social Comparison Orientation (SCO) was used as a measure in all of the studies but two (*Vogel, Park, Lee, Frison*).

According to Leon Festinger and the Social Comparison Theory humans have an evolutionary drive to develop an accurate appraisal of one's opinions and abilities by employing social comparison. To the extent that objective, non-social means are not available for comparison of abilities, people evaluate their abilities by comparison with others in a subjective manner that results in the development of an opinion. Lower self-esteem and self-perception indicates the possibility of a lack of available objective and non-social means to be employed for self-evaluation. This influences individuals with low self-esteem to employ more subjective social comparison to satiate the evolutionary drive for comparison, opportunities for which can be found in abundance on Facebook.

This is indicated clearly by one study which showed that the association between self-esteem and self-perception was strongly associated with higher levels of negative social

comparison among already unhappy adults (*De Vries*). Additionally the only longitudinal study showed that negative online comparison decreased individuals' well-being, and that users who are already dissatisfied with their life in an offline context are more likely to use Facebook in a way in which they compare themselves to others (*Frison*).

Self-perception was used as a measure in three studies (*De Vries, Vogel, Lee*) with self-esteem used as a measure in three studies as well, two of which overlapped (*Vogel, Park, Lee*). Levels of self-esteem and self-perception were consistently exposed to be negatively associated with users' well-being and life satisfaction. (*De Vries, Vogel, Park, Lee*).

What emerged to be a significant element was also intensity of Facebook usage, which predicted high amount of social comparison in the majority of the studies. (*De Vries, Vogel, Park, Lee*). The only study that did not address intensity of Facebook use as a measure was the longitudinal one, though it did address the amount of time spent on Facebook which is similar (*Frison*).

Intensity and amount of usage thus predicted higher amount of SCO and social comparison. The causal association is not confirmed and could be reciprocal or reversed, but is often explained by maintaining that the more time users spend on Facebook, the more opportunity they have to engage in social comparison, providing a higher likelihood for them to be effected by it.

By qualitatively combining the results of the different papers there are considerable emerging patterns which can be delineated as follows; social comparison orientation (SCO) is a propensity toward social comparison, and was found to be associated in

various ways with levels of self-esteem and self-perception in individuals. The higher levels one has of traits connected with self-perception and self-esteem, and the lower degree of SCO one demonstrates, the higher one's levels of life satisfaction and well-being are found to be (*De Vries, Vogel, Park*). The lower self-esteem and self-perception one has the higher the inclination toward social comparison (*Vogel, Park, Lee*). Social comparison and specifically negative social comparison mediates lower mental health, well-being, life satisfaction and negative mood affects (*Vogel, Park, Steers, Frison*). The proposed correlational pathways are shown in *Table 2*.

The levels of Facebook users' base well-being and life satisfaction are important factors regarding how resilient one is to the negative effects of social comparison. Heavier Facebook users are considered to be more inclined toward higher levels of social comparison (*Vogel, Park, Lee*). Generally, the idea that Facebook use in itself is detrimental to users is negated. Social comparison on Facebook, however, is confirmed to be associated with negative well-being and life satisfaction. Self-esteem and self-perception is also shown to be negatively associated with well-being and life satisfaction. (*De Vries, Vogel, Park*). These relationships are reciprocal, whereby life satisfaction and negative social comparison on Facebook are intrinsically related to each other in a self-perpetuating problematic cycle. The question of causality is not answered and further research in the shape of experimental and longitudinal studies to explore the causal pathway are recommended.

Table 1

Study	Design	Participants	Measures	Analysis	Outcon
De Vries et al.	Cross-sectional study	N=231 (18-24)	Facebook use, negative social comparison, self-perception, life satisfaction	Correlational, proposed models tested with maximum likelihood estimation	FB us negativ
Vogel, Rose	Cross-sectional study, experimental	N =145 (mean age: 19)	Facebook use, Self-perception, self-esteem, mood, social comparison orientation	Correlation, hierarchical regression analysis	Higher levels
Jang et al.	Cross-sectional study	N =313 (mean age: 21)	Facebook use, social comparison orientation, perceived social support, mental health, self-esteem	Correlation; structural equation modeling	Social with me
Lee	Cross-sectional study	N =191 (18-24)	Frequency of social comparison, negative feelings, number of friends, use intensity, intensity of social comparison	Correlational, regression analysis	Social feelings
Steers et al.	Cross-sectional study	N=180 (mean age: 24)	Social comparison, depression symptomology, time spent on Facebook	Correlational, multiple gray pathway analysis	Social depress
Frison, Eggermont	Longitudinal study	N=1840 (12-19)	Negative social comparison on Facebook, life-satisfaction, passive Facebook use, amount of Facebook use	Auto-regressive cross lagged analysis	Negativ predicts

Table 2

Proposed correlational pathways	Confirmation found
High SCO or social comparison – low self-esteem and self-perception	*Vogel, Park*
Low self-esteem and self-perception - High SCO	*Lee*
Negative comparison – lowered life satisfaction and well-being	*De Vries, Frison, Steers*
Unhappier users – more affected by comparison	*De Vries, Vogel, Frison*
Low self-esteem and self-perception – lower well-being and life satisfaction	*De Vries, Vogel, Park*

Limitations

The critique and limitation of the cross-sectional study design can be applied to all of the

included studies - this is a possible lack of relevance with regards to causality and settled

directions of correlational pathway and a failure to address chronological variability. The

limitations of the cross-sectional study may result in possible incorrect inferences. Further

longitudinal and experimental research is absolutely necessary to conclusively examine

the causal pathway regarding social comparison, self-esteem and lower levels of well-

being. Finally, limitations in the survey methodology used within all of the studies in this

review should be considered as well. The use of self-report measures, while appropriate research tools in this context, may not produce credible outcomes due to various forms of bias. These include participants' motives, for example for positive self-presentation, acquiescent or reactant responding, constraints on self-knowledge, or inaccuracies resulting from self-deception or memory failure. Self-report measures may also be sensitive to culture, with, for instance, participants of Asian heritage potentially responding differently to participants of European heritage, further compromising the reliability of research findings.

Conclusion

The findings of this systematic review thus partially confirmed and expanded upon our general hypothesis which is as follows; social comparison and negative self-esteem does mediate lower levels of well-being and life satisfaction and Facebook usage but the absolute direction of the correlational pathway is not fully confirmed. The results have narrowed the scope regarding if and how social media, specifically Facebook, impacts users' well-being. What this systematic review suggests is a legitimate associative pathway between Facebook usage and lower levels of life satisfaction under certain conditions. The conditions found are base levels of life satisfaction which in our research have been shown to be tied with levels of self-esteem and self-perception. The hypothesis of this systematic review was partially confirmed but also expanded upon showing that intensity of Facebook usage is an additional important indicator of high SCO and social comparison. Another expansion of the hypothesis is the knowledge that these relationships are not necessarily correlational in one specific direction but in fact enforce each other. This is shown clearly in the only study that attempted to uncover causality by

essentially testing a reverse causal pathway showed that life satisfaction and negative social comparison intrinsically constitute a self-perpetuating cycle of negative effects. It shows that not only is intensity of Facebook use a predictor of symptoms of depression as a consequence of the presence of negative social comparison but the reverse pathway holds true as well; the presence of depressive symptoms predicts high intensity Facebook use and high amount of social comparison.

The fields of online behavior and psychology are ever-evolving and change with regards to the ways in which people use technology for social purposes. These fields hold important implications for healthcare providers such as psychologists and for public health more widely. It is difficult to overstate the extent to which online social networking has infiltrated the everyday lives of people globally, and to ignore the impact of this behavior from a clinical and social perspective may be highly detrimental.

Based on our findings there are a few options that can be implemented to minimize the manifestation of negative effects of Facebook usage. An obvious proposition would be a personality test of Facebook users as they make a profile.

Those individuals who would prove to be at risk with lower levels of base life satisfaction and self-esteem and self-perception could have censorship imposed by the web site itself, triggering a pause in the option of Facebook usage once a certain number of hours has been tracked. This option is problematic, since it is very regulatory and undemocratic, and it also supplies the Facebook corporation an even larger base of big data to manipulate with. A gentler course of action would be a prerequisite explanatory video of the results explaining how social comparison and self-esteem mediate unhealthy Facebook usage and levels of well-being. This could be followed by an encouraging, up-

beat and optimistic life-coaching session, a confidence boosting session, or a calming meditative session with musical assistance.

One of the best courses of action is intense educational programs targeting youth and perhaps their parents. In this way possible at risk young individuals can be aware of their negative predispositions regarding their Facebook use and the effects of the evolutionary reaction of social comparison that occurs on Facebook. These are warnings that might be effective for the rationalization of actions and reactions while maneuvering the virtual sphere of communication and socialization. The main problematic I find as revealed in this paper is as follows: the development of the Network Society and the rise of social media and virtual communication result in a systematically induced magnification of the act of negative social comparison, especially with people who are similar in their socio-economic background and age (which is the majority of ones friends on Facebook), thereby inducing a general heightening of depression in individual users. These are therefore systematic problems and necessitate larger, over-bearing systematic adjustments to fully battle the negative effects of the digitalization of communication in contemporary conditions.

Bibliography

(2018). Number of monthly active Facebook users worldwide as of 3rd quarter 2018 (in millions). The Statistics Portal. Retrieved from

 https://wallaroomedia.com/facebook-newsfeed-algorithm-history/#five

/(2018). Facebook Newsfeed Algorithm History. Wallaromedia.

/.(2014)Mental Health: A state of well-being. World Health Organization.

Retrieved from

https://www.who.int/features/factfiles/mental_health/en/

Appel H., Gerlach A. L., Crusius J. (2016). The Interplay Between Facebook Use, Social Comparison, Envy and Depression, Social Media and Application of Human Behavior.

Retrieved from
 http://soco.uni-koeln.de/docs/Appel_Gerlach_Crusius_2016_COP.pdf

Barth, F. D. (1988). The Role of Self-Esteem in the Experience of Envy. The American Journal of Psychoanalysis.

Retrieved from

https://www.ncbi.nlm.nih.gov/pubmed/3239605

Blease C. R. (2015). Too Many 'Friends,' Too Few 'Likes'? Evolutionary Psychology and 'Facebook Depression'. American Psychological Association.

Retrieved from

https://www.apa.org/pubs/journals/features/gpr-gpr0000030.pdf

Castells, M. (2009). The Rise of The Network Society (pp.368). New Jersey; Wiley-Blackwell Publishing.

D. de Vries, K. Rinaldo. (2015). Facebook and self-perception: Individual susceptibility to negative social comparison on Facebook. Personality and Individual Differences.

Retrieved from

https://www.sciencedirect.com/science/article/pii/S0191886915003682

E. A. Vogel et al. (2015). Who Compares and Despairs? The Effect of Social Comparison Orientation on Social Media Use and Its Outcomes. Personality and Individual Differences.

Retrieved from

https://www.semanticscholar.org/paper/Who-compares-and-despairs-The-effect-of-social-on-Vogel-Rose/54ce71aa719f7c8c55e37d36877275bdecc9c66a

E. Dimitriou-Christidi (2010). The Self-perception and self-esteem of school Graduets.

Retrieved from

http://www.eur-alpha.eu/IMG/pdf/the_self-perception_and_self-esteem_of_second_chance_school_graduates.pdf

E. Frisson, S. Eggermont. (2016). ''Harder, Better, Faster, Stronger'': Negative Comparison on Facebook and Adolescents' Life Satisfaction Are Reciprocally Related, *Cyberpsychology, Behavior and Social Networking.*

Retrieved from

https://www.semanticscholar.org/paper/%22Harder%2C-Better%2C-Faster%2C-Stronger%22%3A-Negative-on-and-Frison-Eggermont/d4e0141acb961e9cc010b2311972e8749ca81602

F. Grant, C. Guille, S. Sen. (2013) Well-Being and Risk of Depression under Stress. PLOS One.

Retrieved from

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3698120/

Festinger L. (1954). A Theory Of Social Comparison Processes. Human Relations.

Retrieved from

http://sci-hub.tw/10.1177/001872675400700202

Krasnova H. Et al. (2014). Envy on Facebook: A Hidden Threat to Users Life Satisfaction. Institute of Information Systems.

Retrieved from

https://www.semanticscholar.org/paper/Envy-on-Facebook%3A-A-Hidden-Threat-to-Users'-Life-Krasnova-Wenninger/b775840d43f9f93b7a9031449f809c388f342291

Krasnova H., Wenninger H., Widjaja T., Buxmann P. (2014). Envy on Facebook: A Hidden Threat to Users Life Satisfaction? Institute of Information Systems.

Retrieved from https://www.ara.cat/2013/01/28/855594433.pdf?hash=b775840d43f9f93b7a9031449f809c388f34229

M. Baldwin, T. Mussweiler. (2017) The Culture of Social Comparison. PANAS.

Retrieved from

https://www.pnas.org/content/115/39/E9067

Meline T. (2006). Selecting Studies for Systematic Review: Inclusion and Exclusion Criteria. Contemporary Issues in Communication Sciences and Disorders.

Retrieved from

https://pdfs.semanticscholar.org/a6b4/d6d01bd19a67e794db4b70207a45d47d82f3.pdf

N. Steers, R. Wicham, L. Acitelli. (2014). Seeing Everyone Elses Highlight Reels: How Facebook Usage is Linekd to Depressive Symptoms. Journal of Social and Clinical Psychology.

Retrieved from

https://www.sciencedaily.com/releases/2015/04/150406144600.htm

Negative Comparison on Facebook and Adolescents' Life Satisfaction Are Reciprocally Related, Cyberpsychology, Behavior and Social Networking.

Noble H., Smith J. (2018). Reviewing the literature: choosing a review design.

Retrieved from

https://ebn.bmj.com/content/early/2018/03/13/eb-2018-102895

Perestelo-Perez L. (2013). Standards on how to develop and report systematic reviews in Psychology and Health. International Journal of Clinical and Health Psychology.

Retrieved from

https://www.sciencedirect.com/science/article/pii/S1697260013700073

R. Prasoon, R Chaturvedi. (2016) Life satisfaction: A Literature review. The Researcher- International Journal of Management Humanities and Social Sciences.

Retrieved from

http://theresearcherjournal.org/pdfs/01021220163.pdf

Remarkable Facebook Addiction Statistics. (2017, May 29th).

Retrieved from

https://brandongaille.com/42-remarkable-facebook-addiction-statistics/

S. Y. Lee. (2014). How do people compare themselves with others on social network sites?: The case of Facebook. Computers in Human.

Retrieved from

https://www.sciencedirect.com/science/article/pii/S074756321300451

Social Networking Habits, WeebRoot

Retrieved from
https://www.webroot.com/in/en/about/press-room/releases/social-networking-habits-webroot-research

Song H. (2016). Social comparison on Facebook: Its antecedes and psychological outcomes. Computers in Human Behavior.

Retrieved from

https://www.researchgate.net/publication/300005242_Social_comparison_on_Facebook_Its_antecedents_and_psychological_outcomes?enrichId=rgreq-0c0f97042cbb6762c10bbc9dfe8e7976-XXX&enrichSource=Y292ZXJQYWdlOzMwMDAwNTI0MjtBUzo1OTU2MDUxOTM3NzMwNTZAMTUxOTAxNDc1MjMyNA%3D%3D&el=1_x_3&_esc=publicationCoverPdf

Sugarman, J. (2017). The Rise of Teen Depression. Jon Hopkins Health Review.

Retrieved from

https://www.johnshopkinshealthreview.com/issues/fall-winter-2017/articles/the-rise-of-teen-depression

Tandoc Edson C., Ferucci P., Duffy M. (2015). Facebook use, envy, and depression among college students: Is Facebooking depressing? Computers in Human Behavior.

Retrieved from.

https://pdfs.semanticscholar.org/846b/59235a7b6f55728e2f308bb1f97a4a6dceba.pdf

Toma L. Catalina (2013), Feeling Better But Doing Worse: Effects of Facebook Self-Presentation on Implicit Self-Esteem and Cognitive Task Performance. Media Psychology.

Retrieved from

https://www.researchgate.net/publication/262873576_Feeling_Better_But_Doing_Worse_Effects_of_Facebook_Self-Presentation_on_Implicit_Self-Esteem_and_Cognitive_Task_Performances

Turkle, Sherry. (2011). Alone Together (pp. 252), New York: Basic Books

Van Dijk, J. (2005). The Network Society, Social Aspects of New Media. (pp. 170). London: SAGE publishing.

Vogel E., Rose P. J., Roberts L. (2014). Social comparison, social media, and self-esteem. American Psychological Association.

Retrieved from

https://www.researchgate.net/publication/275507421_Social_comparison_social_media_and_self-esteem