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# Social Comparison on Social Media and Mental Health: A Scoping Review

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## Zusammenfassung

*Soziale Medien bieten ihren Nutzer\*innen eine Vielzahl von Möglichkeiten zur Online-Selbstdarstellung und stellen somit ein optimales Umfeld für soziale Vergleiche dar. Mit zunehmender Beliebtheit sozialer Medien wächst in der Öffentlichkeit und in der Wissenschaft die Sorge über negative Auswirkungen sozialer Online-Vergleiche auf die psychische Gesundheit der Nutzer\*innen. Die wissenschaftliche Forschung zu diesem Thema nimmt rapide zu, wodurch das Feld heterogener und schwieriger zu überblicken wird. Ziel dieses Scoping Reviews ist es daher, eine systematische Übersicht über das fragmentierte Forschungsfeld zu sozialen Vergleichen in sozialen Medien und psychischer Gesundheit zu bieten. Anhand vordefinierter Einschlusskriterien wurden 131 quantitative Studien systematisch identifiziert, um das Forschungsfeld zu kartieren. Die Ergebnisse zeigen, dass die Zahl der Studien seit 2011 zugenommen hat und dass Erstautoren aus den Vereinigten Staaten und aus dem Fachbereich Psychologie die meisten Beiträge lieferten. In Bezug auf die untersuchten Vergleichsrichtungen, Vergleichsdimensionen und Indikatoren für psychische Gesundheit zeigen die Analysen, dass sich die Studien vor allem auf Aufwärtsvergleiche hinsichtlich verschiedener Vergleichsdimensionen sowie hedonisches Wohlbefinden konzentrierten, während Abwärtsvergleiche und andere Facetten der psychischen Gesundheit im Feld derzeit unterrepräsentiert sind.*

**Keywords:** Sozialer Vergleich, soziale Medien, psychische Gesundheit, Scoping Review

## Summary

*Social media offer their users a variety of opportunities for online self-presentation and thus represent an optimal environment for social comparisons. With the increasing popularity of social media, there is growing concern in public and scientific discourse about negative effects of online social comparisons on users' mental health. Research output on this topic is increasing rapidly, making the field more heterogeneous and difficult to oversee. This scoping review therefore aims to provide a systematic mapping of the fragmented research field on social media comparisons and mental health. Using predefined inclusion criteria, 131 quantitative studies were systematically identified to map the research field. The results showed that the number of studies has grown since 2011 and that first authors from the United States and Psychology departments were the main contributors. With regard to the comparison directions, comparison dimensions, and indicators of mental health examined, the analyses demonstrate that the studies primarily focused on upward comparisons on diverse dimensions and hedonic well-being, whereas downward comparisons and other facets of mental health are currently under-represented in the field.*

**Keywords:** social comparison, social media, mental health, scoping review

Social media are an integral part of modern society and firmly integrated into everyday lives of many people. The use of social media is changing the way people interact and plays an important role in building and maintaining social relationships (e.g., Ellison et al., 2007). New opportunities for social comparisons emerge as platforms collect personal information about their users and make these available to others (Verduyn et al., 2020). This may increase the extent to which users compare themselves with each other, as they are always aware of what is happening in each other's lives (Verduyn et al., 2020; F.-R. Yang et al., 2019). The characteristics of social media favor positive or idealized self-presentation, which is why users are predominantly exposed to positive information about others (Appel et al., 2016; Qiu et al., 2012; Toma, 2017; see also Walther, 1996). This leads to a growing concern that social media use may have a negative impact on users' mental health via unflattering social comparisons (Verduyn et al., 2020). Various studies suggest that social media use promotes detrimental comparisons and feelings of envy and frustration, and that these comparisons are associated with lower well-being (Appel et al., 2016; de Vries et al., 2018; McComb et al., 2023; Steers, 2016; Verduyn et al., 2017). At the same time, other studies suggest there might be a positive side of social media-induced social comparisons, such as being inspired by others (e.g., Meier, Gilbert, et al., 2020; Schreurs et al., 2022).

Scientific interest in the relationship between social comparison on social media and mental health has increased rapidly in recent years (Verduyn et al., 2020). As usual in young research fields, the methodological and theoretical approaches vary widely between these studies. In a large meta-review of prior meta-analyses and systematic reviews, Meier and Reinecke (2021) show that research on social media use and mental health in general is characterized by a rather unsystematic conceptual and methodological approach. Both the measures of social media use and indicators of mental health vary considerably. Without higher-level integration, studies remain hardly comparable and such heterogeneous fields typically produce divergent results, providing little actionable insights and research progress. As research on social comparison in social media represents a sub-field within this larger body of research, it likely suffers from similar levels of heterogeneity, calling for increased efforts to further integrate this literature. To obtain an overview of a fragmented field, research syntheses through systematic literature reviews and meta-analyses are

essential (Card, 2012). Multiple non-systematic narrative reviews (Appel et al., 2016; Bayer et al., 2020; Kross et al., 2021; Meier & Johnson, 2022; Steers, 2016; Verduyn et al., 2020; Verduyn et al., 2022) as well as systematic reviews (High et al., 2022; Krause et al., 2021; McComb et al., 2023; Valkenburg, 2022; Verduyn et al., 2017; Wenninger et al., 2021; F.-R. Yang et al., 2019) on social comparison via social media have recently been published. While they shed light on the relationship between social comparison on social media and mental health, these reviews do not provide a comprehensive, systematic, and up-to-date overview of the existing evidence. For one, several reviews primarily investigate Facebook use and exclude other, now typically more popular, social media, such as Instagram (e.g., Appel et al., 2016; Steers, 2016; F.-R. Yang et al., 2019). Second, reviews so far selectively consider specific indicators of mental health (e.g., Krause et al., 2021; Verduyn et al., 2017; F.-R. Yang et al., 2019), therefore each of them synthesizes only a fraction of the available evidence. Consequently, there is a need for a systematic literature review that, on the one hand, reflects the current social media landscape more fully and, on the other hand, includes more facets of mental health. McComb, Vanman, and Tobin (2023) addressed both of these issues in their recent meta-analysis but focused solely on experimental studies and upward comparisons.

The present review addresses this research gap by compiling the available studies on social media, social comparison, and mental health. Based on several systematic literature searches, we conducted a *scoping review* that maps out the field and summarizes its conceptual and methodological scope. Thereby, we provide a general overview of previous research on social comparison processes on social media and mental health as well as a comprehensive research synthesis. Since social comparison with a focus on body and appearance (i.e., appearance comparison) is already a comparatively well-integrated sub-field in this area (see Saiphoo & Vahedi, 2019), we excluded appearance comparison from this scoping review. The paper aims to achieve three overarching research objectives: (1) First, we describe the *structural properties* of the research field, with a particular focus on publication practices and research designs. Additionally, (2) we analyze the *social comparison directions and dimensions* investigated in the social media context, and (3) the *mental health indicators* that studies have investigated so far.

## Aims of the Scoping Review

### *Structure of the Research Field*

Since we aim to integrate an interdisciplinary and heterogeneous field of research (Meier, Domahidi, & Günther, 2020; Meier & Reinecke, 2021), our scoping review begins by describing its general properties to help future research better navigate the literature. To get a structural overview of the research field, we first examine the publication rate, the publication outlets, the first authors' discipline and national affiliation, as well as the research designs of the studies (e.g., correlational vs. experimental designs, cross-sectional vs. longitudinal designs). Accordingly, the below-described RQ1–RQ4 address the structure of the field.

The publication rate provides information about the total number of studies and about the (temporal) development of a research field, which in turn allows conclusions about the general scientific interest in the topic (Meier, Domahidi, & Günther, 2020). In the context of interdisciplinary research, the question also arises which disciplines deal with the topic and contribute to the research field. An overview of all disciplines involved can help broaden the research community's perceptual horizon (Meier, Domahidi, & Günther, 2020). According to Zuccala (2006), it can be assumed that science communication takes place most frequently and intensively *within* individual (sub-)disciplines ("invisible colleges"), so that scientists may hardly perceive related research from other disciplines. Furthermore, it can be assumed that scholars from different disciplines study the same issue differently due to their specialized expertise and the theoretical backgrounds in their disciplines (Wolfers & Schneider, 2021). Thus, knowledge about the discipline of the authors can help to explain different approaches of the studies. For this reason, the publication rate is presented both over time and across different disciplines. This leads to the first research question:

*RQ1: How is the number of studies on social comparisons on social media and mental health distributed over time and across disciplines?*

Furthermore, we assume that (informal) information exchange between researchers does not only occur within certain disciplines, but also particularly within national borders (Schott, 1991). Therefore, it should be investigated from which countries the publications in a field originate, which is approximated here by the national affiliation of the first author. This knowledge

can help to sensitize researchers to studies from other countries and cultures and point to culture-specific biases (e.g., Henrich et al., 2010). Accordingly, the second research question is:

*RQ2: In which countries are the first authors of the studies on social comparisons on social media and mental health employed?*

Subsequently, our focus shifts to the publication outlets. For researchers in the field, knowledge of the most important journals can be relevant to obtain an overview of possible starting points for targeted literature searches and for submitting their own publications (Meier, Domahidi, & Günther, 2020). Since articles usually first have to undergo a peer review process before being published in scientific journals (Jefferson et al., 2002), the journals can also provide approximate information about the quality of studies. In addition, the publication outlets – as well as the publication rate – allow conclusions about the general relevance the scientific community assigns to the topic (Meier, Domahidi, & Günther, 2020). Accordingly, we ask:

*RQ3: In which journals are the studies on social comparison on social media and mental health published?*

Additionally, we examined research designs within the field. The research field of social comparisons has long been characterized by a "growing diversity in methods" (Wood, 1996, p. 520) and it is often questionable whether study findings are comparable due to different methodological approaches (Gerber et al., 2018; Wheeler & Miyake, 1992). Depending on the design, studies can either provide causal or just correlational evidence (Stein, 2019). Accordingly, the study design determines the informational value of the studies. A final step in structurally integrating this research field is thus to consider the predominantly used methods:

*RQ4: Which research designs are used in the studies on social comparisons on social media and mental health?*

### *Social Comparison Process on Social Media*

Research interest in both social media in general (Meier, Domahidi, & Günther, 2020) and social comparison on social media specifically is increasing (Verduyn et al., 2020). Social media are "computer-mediated communication channels that allow users to engage in social interaction with broad and narrow

audiences in real time or asynchronously” (Bayer et al., 2020, p. 472). They provide a suitable setting for social comparison processes, as comparison information is likely to be more salient on social media than in offline contexts (Appel et al., 2016; Verduyn et al., 2020; F.-R. Yang et al., 2019). Furthermore, due to the high level of individual control users have over the shared content, social media provide platforms for positive self-expression (“positivity bias”; Toma, 2017). Thus, users predominantly post positive experiences and emotions on social media (Qiu et al., 2012), enhancing the likelihood of upward comparisons on social media (Verduyn et al., 2020).

Next to social media use, our review focusses on two broad psychological concepts: social comparison and mental health. *Social comparison* can be defined “as the process of thinking about information about one or more other people in relation to the self” (Wood, 1996, pp. 520–521). People tend to compare themselves with other individuals and evaluate their own abilities, opinions, and characteristics in relation to others (Festinger, 1954). By comparing themselves to others, individuals obtain information about themselves, which can serve as a guide to better understand their own relative standing in a social group (Verduyn et al., 2020).

Comparisons can be made regarding different characteristics such as financial success, leisure activities, or professional performance (Peter et al., 2012), although not every dimension is of the same relevance for everyone (Verduyn et al., 2020). In the literature, various dimensions have been explored. One common, theoretically based classification of dimensions has been proposed by Peter et al. (2012), which is adopted in the present study. Here, five *comparison dimensions* can be distinguished: (1) Attractiveness/appearance, (2) finances/material possessions, (3) performance/skills, (4) social interaction/interaction with people, and (5) values/convictions.

Besides different comparison dimensions, social comparisons can also focus on different *comparison targets*. Accordingly, individuals can either compare themselves with better, worse, or equally situated people. While in *upward comparisons* one perceives the self as inferior to the target, in *downward comparisons* one perceives the self as superior (Gerber et al., 2018). Comparisons with people of equal status are so-called *lateral comparisons* (Corcoran et al., 2011; Peter, 2016). Because the relationship between social

comparison and well-being is likely to vary by comparison direction and dimension, the review examines the directions and dimensions studied in the research field.

*RQ5: Which comparison directions and dimensions are considered in the studies on social comparisons on social media and mental health?*

#### *Operationalization of Mental Health*

The second theoretical construct addressed by this review is mental health. Mental health can be defined as “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (World Health Organization, 2005, p. 10). In empirical research, the term mental health is often referred to and operationalized in many ways. The present review relies on the Extended Two-Continua Model of Mental Health by Meier and Reinecke (2021), which integrates different perspectives on mental health and provides an organizing framework that helps systematize the various indicators.

The model first distinguishes two independent continua of mental health. The first continuum refers to psychopathology and includes all stress-inducing behaviors that negatively affect key aspects of life, such as social relationships or work (Lahey et al., 2017). Further, two dimensions of psychopathology are identified. The *internalizing* dimension includes behaviors, emotions, and cognitions that indicate over-control (e.g., depression and anxiety). All uncontrolled behaviors, emotions, and cognitions (e.g., substance abuse), on the other hand, are classified as *externalizing* psychopathology (Conway et al., 2019; Meier & Reinecke, 2021). The second continuum addresses psychological well-being, which refers to optimal psychological functioning and experience (Ryan & Deci, 2001). Again, two dimensions are distinguished: *hedonia* describes the subjective feeling of happiness or satisfaction, and *eudaimonia* refers to a fulfilled life with a focus on self-actualization and personal growth (Deci & Ryan, 2008; Meier & Reinecke, 2021). These two continua are further supplemented by so-called *risk and resilience factors*, which can promote or compromise mental health (Meier & Reinecke, 2021). Building on this model, the review examines the dimensions of mental health studied in the research field and whether there are differences across research disciplines.

*RQ6: What dimensions of mental health are considered in the studies on social comparisons on social media and mental health across disciplines?*

## Method

### *Scoping Review as a Method of Research Synthesis*

Scoping reviews have become increasingly important as a method of knowledge synthesis with the goal of determining the scope of research literature on a topic and thereby identifying the available evidence in a research field (Colquhoun et al., 2014; Munn et al., 2018; Pham et al., 2014). Colquhoun et al. (2014, pp. 1292–1294) define scoping reviews “[as] a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge.” Although scoping reviews have been used only sporadically in Communication studies (e.g., Karnowski & Sukalla, 2018; Wolfers & Schneider, 2021), they are particularly useful in the context of heterogeneous research fields such as media effects or mental health research (Pham et al., 2014).

### *Systematic Literature Search*

We combined several search strategies to identify as many relevant papers as possible. For an overview of the literature search and the construction of the database, see the PRISMA flowchart in Figure A1 in the appendix (Page et al., 2021).

First, the review builds on a literature base generated from multiple systematic literature searches on the relationship between computer-mediated communication and mental health conducted by Meier and Reinecke (2021) and Meier, Domahidi, and Günther (2020). Since details of these literature searches are presented in the corresponding papers, a more detailed description of the procedure is omitted here. [1] The integrated and deduplicated literature base from these two reviews ( $n = 2,218$  publications) was setup as a Citavi database and then adapted to our research interest in a stepwise procedure consisting of two successive steps of coding. In the first step, a pre-selection of potentially relevant articles was determined by title and abstract screening. Based on four previously defined inclusion and exclusion criteria, described in more detail below, we identified all articles investigating the relationship between social

comparisons on social media and mental health.

In this step, all (1) *primary studies* were included in the initial sample that addressed (2) *social comparison on social media* as well as (3) *mental health*. Additionally, (4) papers dealing solely with *appearance comparison* were excluded, as this subfield is already comprehensively examined in a meta-analysis by Saiphoo and Vahedi (2019). To identify articles in the database dealing with social comparisons on social media (inclusion criterion 2), all titles as well as the abstracts of the articles were screened within the Citavi search function using an iteratively developed search string (see Table A1 in the appendix) that combined terms referring to different forms of social comparison as well as terms referring to social media in general as well as specific social media platforms (e.g., Twitter, Instagram, and Pinterest) in specific. Studies had to examine comparisons that occurred on social media. We defined social media as computer-mediated communication channels that enable synchronous or asynchronous interpersonal or mass media communication (Bayer et al., 2020). According to this definition, we considered social networking sites, messengers, blogs, forums, and chat rooms as social media. Based on this targeted search, 141 potentially relevant articles were identified in the Citavi database. These papers, and four additional papers identified through expert recommendations, were then manually checked. Through this manual title and abstract screening, the papers were checked for inclusion based on the other three inclusion criteria (1, 3, 4). This resulted in an initial literature base of 99 relevant publications. The original literature searches that the Citavi database relied on covered studied published until the end of 2019.

Therefore, secondly, a full-text search in Google Scholar was performed in August 2022 to identify the most recent publications since 2020. To this end, the search string from the Citavi search was slightly modified and adapted. The search was restricted to the period from 2020–2022 and was conducted with four separate search strings (see Table A1 in the appendix), due to inherent limitations of the Google Scholar search function. For each of the four searches, we extracted the first 50 hits (i.e., the first 5 pages with 10 hits per page). Of these 200 hits identified via Google Scholar, 61 papers were duplicates within Google Scholar and five other papers were already identified by the previous search. Thus, we were able to identify 134 additional publications for further screening.

Third, our literature sample was supplemented by a citation search using fourteen relevant reviews from the broader research field of social media and mental health (see Appel et al., 2016; Bayer et al., 2020; High et al., 2022; Krause et al., 2021; Kross et al., 2021; Meier & Johnson, 2022; Steers, 2016; Valkenburg, 2022; Verduyn et al., 2017; Verduyn et al., 2020; Verduyn et al., 2022; Wenninger et al., 2021; F.-R. Yang et al., 2019; Yoon et al., 2019). The articles referenced in these reviews were checked for inclusion based on their titles and compared with previously found articles to identify missing papers. Thereby, we found another 15 relevant publications and included them in the sample. Together, these three search strategies resulted in a preliminary sample of 248 potentially relevant publications.

Finally, the first author coded the full texts of these 248 papers. For this purpose, the articles were exported from the Citavi database to an Excel file and assigned case IDs and random numbers in alphabetical order. The subsequent full text coding was done in the accordingly randomized order. Articles were again screened for relevance based on previously defined inclusion and exclusion criteria (see Table A2 in the appendix). The four criteria used in the previous abstract coding were adopted and supplemented by additional criteria. In summary, papers had to meet the following criteria to be included in the final sample: (1) They had to be in English, (2) empirically operationalize or manipulate social comparisons, (3) examine social comparisons in the context of social media, (4) measure at least one indicator of mental health according to the Extended Two-Continua Model of Mental Health, and (5) consider only nonclinical samples. In addition, (6) the article and (7) the data set used should only be included once in the sample, (8) the full text had to be retrievable, and (9) the article had to be a quantitative (10) primary study (11) at the microlevel (i.e., focus on psychological processes). This full-text screening resulted in a final sample of 115 relevant articles.

#### Data Extraction

To extract data from the included papers, a standardized Excel form was used. As part of full-text coding, all retained articles were coded regarding central characteristics that are relevant for a description and systematization of the research field. At the article level, we coded the *national affiliation* and *discipline* of the first author. At the study level, we registered important *sample information* (population, size, age,

and gender distribution) and *research design*. Concerning the key constructs of our study, we coded the *comparison directions* (upward, downward, lateral, non-specified, and multiple) and *comparison dimensions* (attractiveness, performance & skills, finances & material possessions, social interaction, values & opinions, happiness, experiences, life, and global comparison).<sup>[2]</sup> We further coded the *mental health indicators* and their *overarching mental health dimension* according to the Extended Two-Continua Model of Mental Health (internalizing psychopathology, externalizing psychopathology, hedonic well-being, eudaimonic well-being, risk and resilience factors).

#### Results

Data analysis was performed in SPSS Statistics 23. A table of all included studies with details of study characteristics such as authors, year of publication, population, and sample size is included in the appendix (see Table A3).

#### Study Characteristics

A total of 115 relevant articles were identified, including 131 original studies matching the inclusion criteria of the review. The articles were published between 2011 and 2022. On average, 381 participants were recruited per study ( $SD = 331.51$ ,  $Min = 65$ ,  $Max = 1,621$ ), with a total of 49,915 participants across all studies. Mean age of respondents was 24.34 ( $SD = 4.76$ ), and on average, the samples consisted of 64.59% women ( $SD = 15.84$ ).

#### Field Description

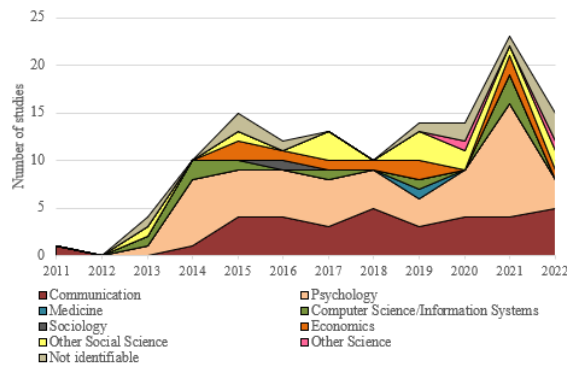
First, we were interested in how publication rate varies over time and across disciplines (RQ1). Over time, the number of studies steadily increased from zero to 15 publications per year between 2012 and 2015 (see Figure 1). In subsequent years until 2020, the publication rate fluctuated between 10 and 14 studies per year, peaking at 23 studies in 2021. For the last reviewed year, there was a slight decrease in the publication rate by eight studies, that is, we found a total of 15 studies published by September 2022. However, it should be noted that the literature search does not cover the entire year 2022. Based on first author discipline, about 38% of the studies ( $n = 50$ ) originated from Psychology, and another 26% ( $n = 34$ ) from Communication. Moreover, Computer Science/Information Systems ( $n = 9$ , 7%), Economics



( $n = 10, 8\%$ ), Medicine ( $n = 1, 1\%$ ), Sociology ( $n = 1, 1\%$ ), Other Social Sciences ( $n = 13, 10\%$ ), and Other Sciences ( $n = 2$ ) contributed to the research field. For 11 studies ( $8\%$ ), the discipline of the first author could not be identified.

Figure 1.

Publication Rate Between Disciplines Over Time

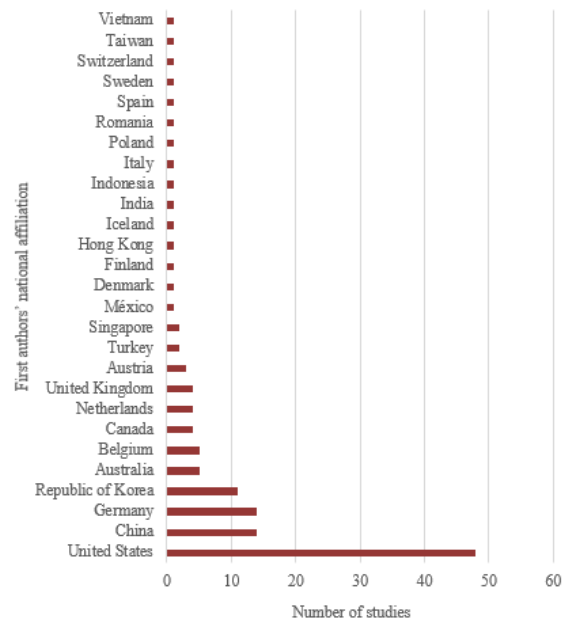


Note.  $N = 131$  studies.

The second research question (RQ2) referred to the national affiliation of the first authors' universities to approximate the international scope of the research field. We identified 27 different countries in which the first authors were employed at the time of publication (see Figure 2). The distribution was extremely skewed. For example, there were 15 countries (e.g., Denmark, Italy, India, and Taiwan) where only one first author originated from. More than a quarter of the first authors were from the United States ( $n = 48, 36\%$ ), 11% ( $n = 14$ ) were from China and Germany, respectively, and another 8% ( $n = 11$ ) from the Republic of Korea. Accordingly, about three-quarters of the studies could be assigned to research institutions from these four countries (US, China, Germany, South Korea).

Figure 2.

National Affiliation of First Author



Note.  $N = 131$  studies.

Research question three (RQ3) asked about the field's publication outlets. About 86% ( $n = 112$ ) of the 131 studies were published in scientific journals (see Figure 3). The remaining 19 studies in the sample were unpublished university publications or conference papers. Data analysis also showed that the 112 published studies appeared in a total of 44 different journals. However, 27 of these journals published only one study in our sample. Accordingly, the distribution was highly skewed, and a large proportion of the studies were published in a few journals. The journal *Computers in Human Behavior* published the most studies ( $n = 21$ ), followed by *Cyberpsychology, Behavior, and Social Networking* ( $n = 10$ ), and *Media Psychology* ( $n = 7$ ) as well as *Personality and Individual Differences* ( $n = 7$ ).

Figure 3.

Relevant Journals of the Field

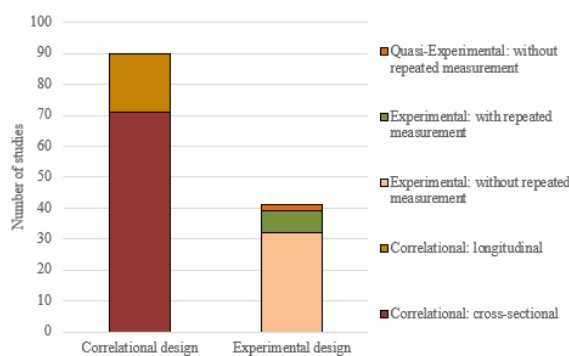


Note. N = 112 published studies.

The last research question (RQ4) in this section focused on the studies' research designs. We found that more than two-thirds of the studies (69%) used a correlational design, and that correlational studies ( $n = 90$ ) therefore dominated over (quasi-)experimental studies ( $n = 41$ ). Furthermore, only 26 of the 131 studies (20%) collected data at two or more different measurement points, meaning that most research in this area does not rely on repeated measurement (i.e., within-person) designs (see Figure 4).

Figure 4.

Research Designs



Note. N = 131 studies.

### Comparison Directions and Dimensions

The fifth research question (RQ5) focused on the comparison directions and dimensions investigated in the research field. Regarding the comparison directions, we found that about 41% of the studies ( $n = 54$ ) examined only upward comparisons. In another 41% of the studies ( $n = 54$ ), multiple comparison directions were measured. None of the studies focused exclusively on downward or lateral comparisons (see Table 1). The remaining studies focused on comparisons with non-specified direction ( $n = 23$ , 17%), that is, examining only whether a comparison occurred without specifying a comparison direction.

Table 1.

Comparison Directions

	n	%	Cumulated %
Upward comparisons	54	41.22	41.22
Multiple comparison directions	54	41.22	82.44
Non-specified comparison direction	23	17.56	100
Sum	131	100	

Note. N = 131 studies.

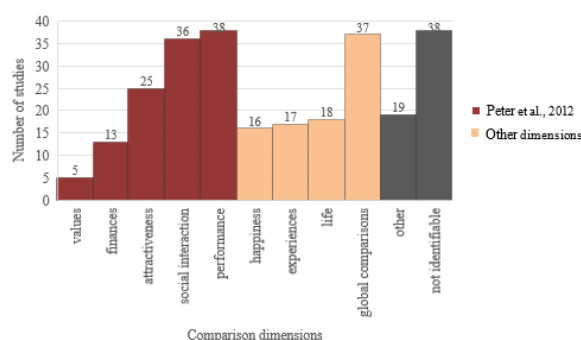
Regarding the comparison dimensions, we found a range of one to eight dimensions and a mean of 2.40 ( $SD = 1.84$ ). Almost one third of the studies focused only on one comparison dimension ( $n = 42$ , 32%). In about 15% of the studies ( $n = 20$ ) two dimensions were addressed, and 24% of the studies ( $n = 32$ ) focused on more than two dimensions. In more than a quarter of the studies ( $n = 37$ , 28%), the type and number of comparison dimensions could not be clearly determined. This was the case, for example, when a scale addressed different dimensions, but the full paper only stated exemplary dimensions or items and did not specify which and how many dimensions were queried in total.

Furthermore, we analyzed the specific dimensions addressed in the studies in more detail, revealing central differences among studies (see Figure 5). Once again, it must be noted that in 37 studies (28%) the comparison dimensions were not identifiable. With regard to the comparison dimensions proposed by Peter et al. (2012), the dimensions performance ( $n = 38$ , 29%) and social interaction ( $n = 36$ , 28%) were examined most frequently. Twenty-five studies (19%) addressed comparisons regarding attractiveness, 13

studies (10%) examined the financial dimension and five studies (4%) focused on values. Beyond these five dimensions derived from existing literature on social comparison theory, we were able to identify additional comparison dimensions that were relevant in empirical studies. For example, 18 studies (14%) focused on comparisons related to life as a whole (e.g., situation in life; others have a better life), 17 studies (13%) addressed comparisons in terms of personal experiences (e.g., travel), and 16 studies (12%) examined the dimension of happiness (e.g., others are happier). In addition, 37 studies (28%) examined global comparisons, for example, by asking whether people feel overall superior or inferior to others after comparing themselves on Facebook. 19 studies (15%) addressed other comparison dimensions that could not be assigned to any of the dimensions described so far (e.g., lifestyle, fitness).

Figure 5.

Comparison Dimensions



Note.  $N = 131$  studies. The figure shows how many studies addressed each dimension, whereby one study could address several dimensions. Thus, studies are included several times if they considered more than one comparison dimension.

### Mental Health Operationalization

The last part of the review focused on the operationalization of mental health. Research question six (RQ6) asked about the dimensions of mental health studied and whether there were differences between disciplines.

Across all studies, 375 mental health indicators were assessed with a range of one to 14 indicators per study and an average of about three indicators per study ( $M = 2.84$ ,  $SD = 2.09$ ). However, most studies assessed either one indicator ( $n = 33$ , 25%) or two indicators ( $n = 44$ , 34%), suggesting that this average is affected by outliers (i.e., studies including many mental health indicators). Twenty-one studies included three indicators (16%), 12 studies collected four indicators

(9%), and 21 studies measured more than four indicators (16%). When multiple indicators were examined in one study, these indicators did not necessarily belong to the same mental health dimension: more than half of the studies examined indicators of different dimensions ( $n = 76$ , 58%), whereas the remaining studies assessed only one dimension each ( $n = 55$ , 42%).

We then examined how many studies assessed psychopathology indicators, psychological well-being indicators, resilience, and risk factors. The analysis revealed that psychological well-being was most frequently examined. About two-thirds of all studies measured at least one indicator of psychological well-being ( $n = 83$ , 62%), while psychopathology was examined in only 38% of all studies ( $n = 51$ ). In addition, resilience factors were assessed in more than half of all studies ( $n = 69$ , 52%), whereas only 16 studies included risk factors (12%).

Within the sample of 375 indicators of mental health, hedonic well-being was measured most frequently. [3] While 42% ( $n = 156$ ) of all indicators measured hedonic well-being, eudaimonia – the other dimension of psychological well-being – was measured by only 8% ( $n = 29$ ) of all indicators. Looking at hedonic indicators only, 30% measured affective states ( $n = 47$ ), 21% ( $n = 32$ ) assessed life satisfaction and discrete emotions, respectively, 12% addressed mood ( $n = 18$ ), and 17% other forms of hedonic well-being ( $n = 27$ , e.g., domain-specific satisfaction, subjective well-being). The eudaimonic indicators covered inspiration ( $n = 8$ , 28%), belongingness ( $n = 4$ , 14%), meaningfulness ( $n = 3$ , 10%), and other constructs such as vitality and self-actualization ( $n = 14$ , 48%). With regard to psychopathology, it became apparent that only one indicator (hostility) referred to externalizing psychopathology (0.3%), whereas 19% of all mental health indicators measured internalizing psychopathology ( $n = 72$ ). Of the 72 internalizing psychopathology indicators, 42% captured depressive symptoms ( $n = 30$ ), 19% anxiety ( $n = 14$ ), and the remaining 39% other psychopathological symptoms ( $n = 28$ , e.g., rumination, problematic media use). The remaining 109 indicators were risk ( $n = 20$ , 5%) and resilience factors ( $n = 89$ , 24%). Within the resilience factors, self-esteem ( $n = 68$ , 76%) was most frequently examined, followed by social support ( $n = 5$ , 6%), self-worth ( $n = 4$ , 5%) and other factors ( $n = 12$ , 14%). Focusing on risk factors, loneliness and fear of missing out were assessed in five indicators (25%) each, whereas the remainder captured other risk factors such

as self-consciousness or information overload ( $n = 10$ , 50%). Eight indicators (2%) could not be assigned to any of the dimensions of the Extended Two-Continua Model and were categorized as unclassifiable. This was the case, for example, when a mean index was calculated from several items belonging to different dimensions (e.g., mental health, upward assimilative emotions).

Analyzing the number of indicators per dimension compared across disciplines, it became apparent that research on psychopathology was mostly conducted in Psychology (see Table A4 in the appendix): indicators of internalizing psychopathology ( $n = 36$ , 50%) as well as externalizing psychopathology ( $n = 1$ , 100%) have been studied primarily by first authors from Psychology and were of minor interest in other disciplines, such as Communication (internalizing psychopathology:  $n = 7$ , 10%; externalizing psychopathology:  $n = 0$ , 0%). Regarding psychological well-being, hedonic well-being was most frequently studied by authors from Communication ( $n = 57$ , 37%), followed by Psychology ( $n = 46$ , 29%) and Other Social Sciences ( $n = 10$ , 6%). Eudaimonic well-being, on the other hand, was approximately equally studied in Psychology ( $n = 9$ , 31%) and Communication studies ( $n = 8$ , 28%). Looking at risk and resilience factors, we found that the few risk factors are more or less evenly distributed across different disciplines (e.g., six in Psychology, 30%; four in Communication, 20%; three in Computer Science/Information Systems, 15%). Resilience factors, on the other hand, are mainly studied in Psychology ( $n = 42$ , 47%) and somewhat less frequently in Communication ( $n = 25$ , 28%). A comparison of the two disciplines with the highest publication output in the research field showed that the ratio of the dimensions studied was much more balanced in Psychology than in Communication. Thus, internalizing psychopathology, hedonic well-being, and resilience factors were about equally prevalent in Psychology. In Communication studies, on the other hand, the focus was primarily on hedonic well-being, followed by resilience factors, which were studied less than half as often.

## Discussion

The relationship between computer-mediated communication and mental health has been part of the scientific as well as public discourse for decades and the role of social comparison in this context is regarded as central by researchers and social media companies

alike (Burke et al., 2020; Meier & Johnson, 2022). As more and more people are using social media in their daily lives (Beisch & Schäfer, 2020), research interest is growing and the field is becoming more and more complex (Meier, Domahidi, & Günther, 2020; Verduyn et al., 2020). In such fragmented research fields, the need for systematic knowledge syntheses increases in order to gain sound insights despite considerable variability in operationalizations (Card, 2012). The present scoping review works towards greater research synthesis by providing an overview of studies on social comparison on social media and mental health.

With regard to the first research objective, the results revealed an upward trend in the publication rate since 2012, with Psychology showing the largest publication output. This dominance of Psychology also became apparent with regard to the two most relevant publication outlets – *Computers in Human Behavior* and *Cyberpsychology, Behavior and Social Networking* – since both are psychological journals (see also Meier, Domahidi, & Günther, 2020). Following the argumentation of Meier, Domahidi, and Günther (2020), the research field could benefit from becoming more interdisciplinary in the future, as this would provide a more comprehensive understanding of the relationship of the two key constructs – social media and social comparison – beyond the psychological perspective. Although the particular interest in the topic from Psychology can be explained by the fact that social comparison and mental health are core psychological constructs, other disciplines can help to expand the understanding of the reciprocal relationship through their respective professional expertise. Psychological research typically focuses primarily on individuals' cognitions, affects, and behaviors; yet, from a Communication perspective, for example, a stronger focus on social interaction as a process of message exchange (interaction level) or the effect of different types of content (content level) could provide new insights (Meier & Reinecke, 2021). As our findings on the operationalization of mental health illustrate, the Communication perspective also offers a stronger focus on positive outcomes and thus complements the more psychopathology-oriented perspective of psychological research. Similarly, from a Computer Science/Information Systems perspective, technological features and affordances of social media and their role in the relationship between social comparison and mental health could further broaden the perspective of social comparison and social media research. Currently, this literature mainly investigates offline psychological processes in an online context,

often without specifying, measuring, or manipulating what makes an online context (e.g., a social media app or feature) unique (Meier & Johnson, 2022). In terms of national affiliation, the first authors of the studies were employed in 27 different countries at the time of publication. While this finding may indicate a diverse international orientation of the research field and cultural diversity on first sight, a closer look revealed a dominance of the United States as well as China, Germany, and the Republic of Korea. It seems plausible that the size of a nation affects its publication output. Since the US and China are particularly large, a higher publication output is to be expected. However, this does not change the clearly documented dominance of a few nations in the field.

Overall, these results indicated that the research field is dominated by a few disciplines and nations, which could point to “invisible colleges” among researchers within certain countries and disciplines. This may potentially inhibit international as well as interdisciplinary exchange and favor the emergence of certain research traditions within national boundaries or disciplines (Schott, 1991; Zuccala, 2006). However, any interpretation must consider that national affiliation does not permit a conclusive assessment of the international orientation or diversity of the research field. For one, national affiliation does not provide information about the first authors’ nationality or cultural background, but only about the country in which they were employed at the time of publication. On the other hand, only the affiliation and discipline of the first author was considered, while those of the co-authors were neglected.

The analysis of the research designs showed that almost two thirds of the studies followed a correlational approach, and that longitudinal within-person evidence is an exception in the research field. Although the effects of social media social comparison on well-being assume within-person changes, the studies largely considered between-person associations (Valkenburg et al., 2016). These correlational studies are therefore unable to provide conclusive information about the effects of social comparisons. The large number of correlational studies and studies with only one measurement point makes it difficult to draw conclusions about causal relationships. To answer the question of causality in this research field, more experimental studies and longitudinal designs will be needed in the future (see McComb et al., 2023, for a recent meta-analysis of experimental studies).

The second aim of the review was to shed light on the comparison directions and dimensions studied in the field. While social comparison theory suggests a clear distinction between upward, downward, and lateral comparisons (Corcoran et al., 2011), the latter two seem to play a minor role in the empirical research. Numerous studies dealt solely with upward comparisons, whereas no study focused exclusively on downward or lateral comparisons. Nevertheless, the theoretical distinction of the comparison directions was considered in 41% of the studies that examined several comparison directions. The large number of studies addressing only upward comparisons can likely be explained by the nature of the research object, social media. Social media are characterized by a positivity bias (Qiu et al., 2012) and favor positive self-representation among users (Appel et al., 2016; Toma, 2017). This makes upward comparisons more likely and may explain the high research interest. Nevertheless, a more balanced view on different forms of comparisons, their mutual interaction, and combined effects appears highly desirable for future research.

The analysis of the comparison dimensions showed that the typology of five comparison dimensions proposed by Peter et al. (2012) does not correspond to the variety of dimensions actually examined in the research field reviewed. One reason for this may be that the dimensions presented in Peter et al. (2012) were identified in the context of TV use, whereas we focused on social media. Hence, on social media – compared to TV use – there seem to exist additional relevant comparison dimensions (such as happiness or experience). This assumption is supported by Krasnova et al. (2015), who identify twelve categories of envy-triggering objects on social networking sites,<sup>[4]</sup> which largely correspond to the comparison dimensions extracted in the present review. Since the findings of both studies are similar, and envy is clearly associated with upward comparison, it seems useful to consider these comparison dimensions in further theory building. Another finding of our analysis is that we were unable to identify the type and number of comparison dimensions for more than a quarter of the studies based on the reported information. This points to a reporting problem within the field. On the one hand, it is important to measure social comparison accurately. On the other hand, however, these measurements must be reported in sufficient detail.

The third part of the review addressed the operationalization of mental health. The analyses showed that empirical research has focused primarily

on the study of psychological well-being and that psychopathology has been considered less frequently. Taking into account that Psychology dominated the research field, the interest in psychological well-being may indicate a strong influence of “Positive Psychology” in the field (see F.-R. Yang et al., 2019). Positive Psychology generally examines the conditions and factors that lead to optimal functioning of individuals (Gable & Haidt, 2005), and thus is closely related to psychological well-being. A closer look at the dimensions revealed that, with regard to psychopathology, mainly internalizing psychopathology symptoms and, with regard to psychological well-being, mainly hedonic well-being were examined. In addition, findings demonstrated that mental health is often operationalized by resilience factors, suggesting that a comprehensive conceptualization of mental health should take such factors into account. Since resilience and risk factors are not considered in the majority of current mental health models (Meier & Reinecke, 2021), this finding emphasizes the potential usefulness of the Extended Two-Continua Model of Mental Health (Meier & Reinecke, 2021) to further advance and integrate the research field.

Furthermore, the findings revealed discipline-related differences in the constructs or dimensions of mental health examined. While Communication primarily considered psychological well-being, the relationship between psychological well-being, psychopathology and resilience factors was more balanced in Psychology. These findings point to different research agendas across disciplines and support the call for an interdisciplinary opening of the field to counteract a one-sided investigation of mental health. However, the results also showed that there were many studies that examined mental health with more than one indicator and including several perspectives on mental health. This, in turn, suggests that a more sophisticated and multidimensional understanding of mental health is relatively prevalent in this research field.

### Limitations and Research Desiderata

The findings of the present review must be considered in light of some limitations. A first limitation refers to the fact that both the literature search and the actual coding were carried out by only the first author. This poses the risk that the review may be biased by subjective assessments and, despite all efforts, may not be objective or intersubjectively comprehensible. Second, neither inter- nor intra-coder reliability was tested. Thirdly, with regard to the inclusion and

exclusion criteria, it must be critically noted that studies were only included in the sample if social comparisons were operationalized in the context of social media, and this was explicitly stated in the wording of the items. Accordingly, a study was excluded, for example, if the use of social media was experimentally manipulated, but the subsequent questions about social comparisons were general and it was not clear from the wording that explicit comparisons on social media were measured. This may be problematic in that, although the link between social comparison and social media use was not made explicit, participants may have made this link on their own when answering the question. Thus, this exclusion criterion probably led to the exclusion of some experimental studies that might be relevant to the general research field. A further limitation resulting from the inclusion criteria is, fourth, that only quantitative papers in English were included. Although the focus on English-language papers makes our review internationally accessible and replicable, relevant articles in other languages remain disregarded. Fifth, we updated the original literature base in 2022 only through a Google Scholar search to find relevant papers published between 2020 and 2022. To increase the number of relevant studies identified, additional databases could be searched.

With regard to social comparison theory, the review only examined the comparison directions and dimensions. Further investigations should focus on other theoretical assumptions besides these two aspects, such as the cognitive orientation towards similarities or differences (*assimilation* vs. *contrast*) as well as *comparison motives* (e.g., self-improvement or self-enhancement). Moreover, due to resource limitations of our review, we did not analyze which social media platforms and which forms of social media use were investigated in the research field. Since knowledge about this can reveal further research gaps in the field and may explain divergent study findings, this would be an interesting starting point for future studies.

### Conclusion

Despite these limitations, the present review provides a much-needed mapping of how the relationship between social comparisons on social media and mental health has been studied so far. Our scoping review was able to contribute to a structural and conceptual systematization of the research field. In summary, the findings illustrated that there is currently still little systematic integration of individual studies into a

theoretically coherent overall context, despite this research being grounded in a well-established psychological theory (i.e., social comparison theory). To contribute to further integration, it might be helpful to draw on the Extended Two-Continua Model of Mental Health (Meier & Reinecke, 2021), which proved a useful tool for systematizing the identified studies. However, it should be noted that research on dimensional approaches in psychopathology is still ongoing and the mental health model may need to be updated to include additional psychopathology dimensions in the future (Meier & Reinecke, 2021). Moreover, the research field could benefit from a larger number of experimental as well as longitudinal studies that allow conclusions about causal relationships. Experience sampling studies may be particularly useful in this context, as they allow the investigation of between-person versus within-person associations in situ, with a high external validity, and over a longer time period. In this way, not only short-term effects but also long-term and prospective effects of social media social comparisons could be identified (Appel et al., 2016). Despite our efforts to further integrate this research field and these first insights, the process of research synthesis is not yet completed with the present scoping review; rather our evidence map serves as a starting point for further synthesis such as statistical meta-analyses.

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## Endnotes

[1] The authors combined multiple literature search methods and updated their searches several times. First, they conducted standardized academic database searches within the meta-database EBSCO Host and other databases (EBSCO: Business Source Premier, Communication Abstracts, EconLit, LISTA, PSYINDEX; ScienceDirect; and Web of Science). These database searches were supplemented by citation searches, reference searches, and Google Scholar title searches. The identified literature corpus includes journal articles, dissertations, and conference proceedings published between 1995 and 2019.

[2] The initial five dimensions were adopted from Peter et al. (2012) and the remaining dimensions were developed inductively on the material.

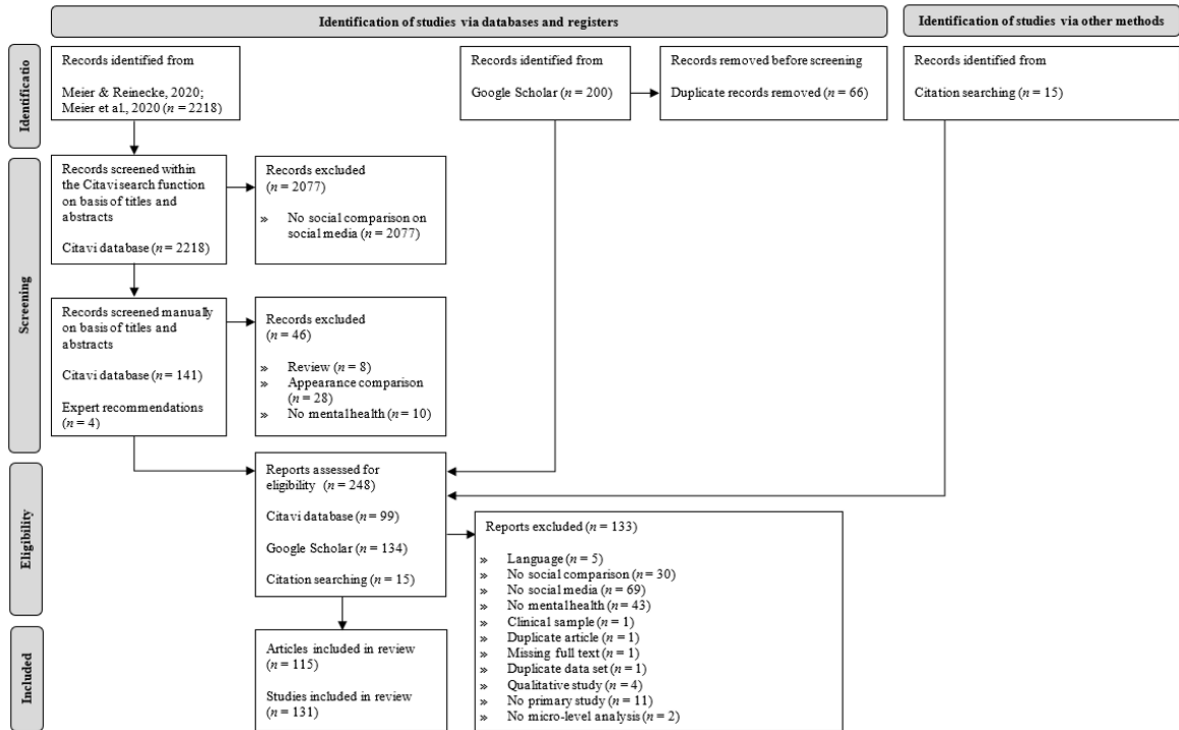
[3] In contrast to the previous analyses, the data analysis presented below was conducted at the indicator level rather than at the study level. This means that the number of included cases did not represent the number of all studies ( $n = 131$ ), but the totality of mental health indicators ( $n = 375$ ).

[4] Main categories of objects of envy according to Krasnova et al. (2015): Travel and Leisure, Relationship and Family, Success (in: Money and Material Possessions), Success (in: Job), Success (in: Studies), Success (in: General/Other), Social Interaction, Appearance, Personality, Abilities, Happiness, Other (e.g., Lifestyle, Experience).

Appendix

Figure A1.

PRISMA Flow Diagram



**Table A1.***Search Strings***Citavi Search String**

“social comparison” OR envy OR envious\* OR “upward comparison” OR “down-ward comparison” OR “social comparative” OR “comparison process\*”) AND (“social media” OR “social network\*” OR “social-network\*” OR SNS OR Facebook OR Twitter OR Instagram OR Snapchat OR Pinterest OR Tumblr OR Reddit OR YouTube OR WhatsApp OR WeChat OR QQ OR QZone OR Weibo OR Skype OR Line OR Xing OR LinkedIn OR TikTok OR “instant mess\*”)

**Google Scholar Search Strings**

“social comparison” AND (“social media” OR “social network\*” OR “social-network\*” OR SNS OR Facebook OR Twitter OR Instagram OR Snapchat OR Reddit OR YouTube OR WhatsApp OR WeChat OR QZone OR Weibo OR TikTok OR “instant mess\*”)

envy AND (“social media” OR “social network\*” OR “social-network\*” OR SNS OR Facebook OR Twitter OR Instagram OR Snapchat OR Reddit OR YouTube OR WhatsApp OR WeChat OR QZone OR Weibo OR TikTok OR “instant mess\*”)

“upward comparison” AND (“social media” OR “social network\*” OR “social-network\*” OR SNS OR Facebook OR Twitter OR Instagram OR Snapchat OR Reddit OR YouTube OR WhatsApp OR WeChat OR QZone OR Weibo OR TikTok OR “instant mess\*”)

“downward comparison” AND (“social media” OR “social network\*” OR “social-network\*” OR SNS OR Facebook OR Twitter OR Instagram OR Snapchat OR Reddit OR YouTube OR WhatsApp OR WeChat OR QZone OR Weibo OR TikTok OR “instant mess\*”)

*Note.* The search in Google Scholar was repeated four times, using one of the search strings each time.

**Table A2.***Description of the Inclusion and Exclusion Criteria in Detail*

<b>Criteria</b>	<b>Description</b>
(1) language	Due to the international nature of the research field, only English-language papers were considered in order to make the review accessible to the entire research field and to ensure the replicability of the results.
(2) social comparison	Only papers that examined social comparisons in the context of an empirical study were included. To meet this criterion, the method and/or results section of a paper had to clearly indicate that social comparisons were operationalized or manipulated in some way. A theoretical argument along the lines of social comparison theory without an appropriate operationalization was not sufficient (e.g., Burke & Kraut, 2016; Dion, 2016; Holmgren & Coyne, 2017). If it was apparent from the full text that only appearance comparison was being investigated, this paper was also excluded (e.g., Strubel et al., 2018). In addition, papers were excluded if the social comparison items were aggregated with other items to form a global index and were not analyzed separately (e.g., Nesi et al., 2017; A. R. Smith et al., 2013; Ouwerkerk & Johnson, 2016).
(3) social media	The scoping review was only interested in social comparisons on social media. If a paper operationalized social comparison processes but did not refer to social media but only to an offline context, it was excluded. The reference to social media had to be explicit in the formulation of the operationalization. If this was not the case, the article was excluded (e.g., Alfasi, 2019; Burnell & Kuther, 2016; Clark et al., 2018; Ferguson et al., 2014).
(4) mental health	We only included those papers that measured at least one indicator of the Extended Two-Continuum Model of Mental Health. This covers indicators of psychopathology and psychological well-being as well as risk and resilience factors. However, if no indicator of mental health in terms of the Extended Two-Continuum Model was assessed, the paper was excluded (e.g., Burke et al., 2020; Latif et al., 2021; Wenninger et al., 2019).
(5) non-clinical sample	To draw conclusions about the general population, only non-clinical samples were considered. Papers examining a sample consisting only of physically or mentally ill participants were excluded. Since according to this criterion only participants without (chronic or acute) illnesses or limitations should be considered, samples consisting of special education classes were also excluded (see Nesi & Prinstein, 2015).
(6) duplicate article	Papers were only allowed to be included once in the sample. If the full text of a paper was already coded once, the duplicate paper had to be excluded (e.g., Krasnova et al., 2013).
(7) duplicate data set	Each data set was considered only once in the sample. If a dataset was analyzed in several articles and one of these articles was already coded in the full-text coding, the second article with the identical dataset was excluded (see Tromholt et al., 2015).
(8) missing full text	The full texts of the articles had to be retrievable through the online licenses of the Johannes Gutenberg University Mainz, the Friedrich Alexander University Erlangen-Nuremberg or the Ludwig Maximilian University Munich. If the full text of an article could not be found even after intensive online search, the article had to be excluded (see Kik, n.d.).
(9) quantitative study	If a paper presented qualitative rather than quantitative evidence, the paper was excluded (see Fox & Moreland, 2015; Stefanita et al., 2018; Weinstein, 2018).
(10) primary study	Non-empirical as well as non-scientific papers such as reviews, commentaries, opinion articles, or case studies were excluded (see Clark et al., 2018; Uhler, 2015; Wiederhold, 2016).
(11) no micro-level analysis	Only articles examining the relationship between social comparisons on social media and mental health at the personal level, i.e., the micro level, were included. Studies on the meso or macro level were not considered.

**Table A3.***Study Overview*

ID	Study	Discipline	Sample	Affiliation	N	Age (M) <sup>a</sup>	Age (SD)	Prop. of women <sup>b</sup> (%)	Design <sup>c</sup>
1	Appel et al., 2015	Psychology	Other	Germany	89	27.45	8.1	85	Quasi-experimental: without repeated measurement
2	Balaban & Spoaller, 2020	Communication	Emerging Adults	Romania	411	22.06	4.89	62.5	Correlational: Cross-Sectional
3	Burnell et al., 2020	Other Social Science	Emerging Adults	United States	134	22.15	0.48	55	Correlational: Longitudinal
4	Burnell et al., 2019	Other Social Science	Students	United States	717	21.47	4.64	69	Correlational: Cross-Sectional
5	Chae, 2018a	Communication	Other	Singapore	1064	29.3	5.32	100	Correlational: Longitudinal
6	Chae, 2018b	Communication	Other	United States	782	29.3	5.32	100	Correlational: Longitudinal
7	Choi & Kim, 2021 (study 1)	Communication	Students	Republic of Korea	133	23.62	3.23	71.43	Quasi-experimental: without repeated measurement
8	Choi & Kim, 2021 (study 2)	Communication	Other	Republic of Korea	117	23	2.91	61.54	Correlational: Longitudinal
9	Chow & Wan, 2017	Psychology		Hong Kong	282	33.19	10.1	30.85	Correlational: Cross-Sectional
10	Coyne et al., 2017	Other Social Science	Other	United States	749	30.38	5.15	100	Correlational: Cross-Sectional
11	Cramer et al., 2016	Communication	Students	United States	267	23.63	6.06	67	Correlational: Cross-Sectional
12	Cretti, 2014	Psychology	Other	United States	656	29.23	7.17	100	Correlational: Cross-Sectional
13	de Vries & Kuhne, 2015	Communication	Emerging Adults	Netherlands	231	22.3	2.2	69	Correlational: Cross-Sectional
14	de Vries et al., 2018	Communication		Netherlands	126	21.4	2.4	81	Experimental: without repeated measurement
15	Dibb & Foster, 2021	Psychology	Other	United Kingdom	114	35.65	15.1	80.8	Correlational: Cross-Sectional
16	Ding et al., 2017	Psychology	Students	China	707	19.06	1.12	50	Correlational: Cross-Sectional
17	Dündar & Tufan, 2022		Other	Turkey	205			67.81	Correlational: Cross-Sectional
18	Faranda & Roberts, 2019	Psychology	Other	Australia	181	21.9	2.14	71.82	Correlational: Cross-Sectional
19	Feinstein et al., 2013	Psychology	Students	United States	268	19.66	2.29	62	Correlational: Longitudinal
20	Frison & Eggermont, 2016	Communication	Adolescents	Belgium	1621	14.76	1.41	48	Correlational: Longitudinal

ID	Study	Discipline	Sample	Affiliation	N	Age (M) <sup>a</sup>	Age (SD)	Prop. of women <sup>b</sup> (%)	Design <sup>c</sup>
21	Gerson et al., 2016	Psychology	Other	United Kingdom	337	36.5	11.3	60	Correlational: Cross-Sectional
22	Greitemeyer, 2016 (study 1)	Psychology	Other	Austria	509	23	4.5	70	Experimental: without repeated measurement
23	Greitemeyer, 2016 (study 2)	Psychology	Other	Austria	479	26.1	9.8	77	Experimental: without repeated measurement
24	Guðlaugsdóttir, 2016	Psychology	Other	Iceland	136	28.67		100	Correlational: Cross-Sectional
25	Haferkamp & Krämer, 2011	Communication	Other	Germany	103	23.11	3.44	58	Experimental: without repeated measurement
26	Hanna et al., 2017	Other Social Science	Students	United States	1104	19.23		62.5	Correlational: Cross-Sectional
27	Hansen, 2016	Psychology	Students	United States	119	29.87		78	Correlational: Cross-Sectional
28	He et al., 2020	Other Social Science	Students	China	668	20.05	1.38	55	Correlational: Cross-Sectional
29	Hughes, 2016		Other	United States	108	22.2	7.3	52	Correlational: Cross-Sectional
30	Jabłońska & Zajdel, 2020	Other Science	Other	Poland	974	33.5		100	Correlational: Cross-Sectional
31	James et al., 2017	Computer Science / Information Systems	Other	United States	798			67.54	Correlational: Cross-Sectional
32	Jang et al., 2016	Communication	Students	Republic of Korea	313	21.17	1.95	70	Correlational: Cross-Sectional
33	Jin, 2018	Economics	Other	Republic of Korea	141	33.3		100	Experimental: without repeated measurement
34	Johnson, 2021	Communication	Adults	United States	163	26.97	10.34	62.6	Correlational: Cross-Sectional
35	Johnson & Knobloch-Westerwick, 2014	Communication	Students	United States	174	19.59	2.16	67	Experimental: without repeated measurement
36	Johnson & Knobloch-Westerwick, 2017 (study 1)	Communication	Students	Netherlands	152	20.62	3.45	55	Experimental: without repeated measurement
37	Johnson & Knobloch-Westerwick, 2017 (study 2)	Communication	Students	Netherlands	168	21.64	3.69	64	Experimental: without repeated measurement
38	Kaiser et al., 2021	Psychology	Adults	United States	1294	32	9.7		Correlational: Cross-Sectional
39	J. Kang & Liu, 2019	Communication	Students	United States	143	19.83	0.8	84	Experimental: without repeated measurement
40	S. Kang et al., 2013		Adolescents	United States	366	15.9	1.2	53.3	Correlational: Cross-Sectional
41	Kim, 2022	Communication	Other	Republic of Korea	567	36.1	10.14	55.56	Correlational: Cross-Sectional

ID	Study	Discipline	Sample	Affiliation	N	Age (M) <sup>a</sup>	Age (SD)	Prop. of women <sup>b</sup> (%)	Design <sup>c</sup>
42	Kohler et al., 2021	Communication	Students	United States	81	19.07	1.56	65.43	Experimental: with repeated measurement
43	Krasnova et al., 2013	Computer Science / Information Systems	Other	Germany	227			68	Correlational: Cross-Sectional
44	Krasnova et al., 2015	Computer Science / Information Systems	Students	Switzerland	509			67	Correlational: Cross-Sectional
45	J. K. Lee, 2022	Communication	Other	Republic of Korea	236	25.8		43.6	Correlational: Cross-Sectional
46	S. Lee, 2022		Other	Republic of Korea	1332	40.53		50.83	Correlational: Cross-Sectional
47	S. Y. Lee, 2014	Computer Science / Information Systems	Students	United States	191	19.9		38	Correlational: Cross-Sectional
48	Lemay et al., 2019	Medicine	Students	Canada	119	17.96	1.14	64.71	Correlational: Cross-Sectional
49	Lim & Yang, 2015	Economics	Other	Republic of Korea	446	22.83		44	Correlational: Cross-Sectional
50	Lin & Utz, 2015 (study 1)	Communication	Other	Germany	207	41.7	14.6	64	Correlational: Cross-Sectional
51	Lin & Utz, 2015 (study 2)	Communication	Other	Germany	146	25	6.3	84	Experimental: without repeated measurement
52	C. Liu & Ma, 2020		Students	China	519	19.42	1.49	58.38	Correlational: Cross-Sectional
53	H. Liu et al., 2019	Economics	Other	United States	303	27		46	Experimental: without repeated measurement
54	J. Liu et al., 2016	Communication	Other	United States	163	32.71	11.41	53	Experimental: without repeated measurement
55	Q.-Q. Liu et al., 2017	Psychology	Students	China	1205	19.86	1.27	51	Correlational: Cross-Sectional
56	Loi et al., 2020	Psychology	Emerging Adults	Australia	173	22.07	2.37	58.38	Correlational: Cross-Sectional
57	Luong et al., 2021		Students	United States	292	20.34	2.73	59.9	Experimental: without repeated measurement
58	Lup et al., 2015	Psychology	Other	United States	117	24.81	2.51	84	Correlational: Cross-Sectional
59	Meier, Gilbert, et al., 2020 (study 1)	Communication	Other	Germany	270	23.55	5.35	72	Experimental: without repeated measurement
60	Meier, Gilbert, et al., 2020 (study 2)	Communication	Other	Germany	408	28	6.34	76	Experimental: with repeated measurement
61	Meier & Schäfer, 2018	Communication	Other	Germany	385	22.64	4	82	Correlational: Cross-Sectional
62	Midgley et al., 2021 (study 1)	Psychology	Students	United States	213	18.98	1.64	73.71	Correlational: Cross-Sectional

ID	Study	Discipline	Sample	Affiliation	N	Age (M) <sup>a</sup>	Age (SD)	Prop. of women <sup>b</sup> (%)	Design <sup>c</sup>
63	Midgley et al., 2021 (study 2)	Psychology	Adults	United States	91	32.95	10.19	69.23	Experimental: without repeated measurement
64	Midgley et al., 2021 (study 3)	Psychology	Other	United States	415	37.55	12.79	59.04	Experimental: without repeated measurement
65	Midgley et al., 2021 (study 4)	Psychology	Students	United States	79	20.15	2.4	64.56	Correlational: Longitudinal
66	Morry et al., 2018 (study 1)	Psychology	Students	Canada	172	19.54	3	53	Experimental: without repeated measurement
67	Morry et al., 2018 (study 2)	Psychology	Students	Canada	180	19.56	2.76	63	Experimental: without repeated measurement
68	Muench et al., 2015	Psychology		United States	489	35.63		61	Correlational: Cross-Sectional
69	Mukesh & Goncalves, 2013	Other Social Science	Other	Spain	245	29		48	Experimental: without repeated measurement
70	Mwiinga, 2015	Other Social Science	Other	Sweden	65	25.5		51	Correlational: Cross-Sectional
71	Nayenggita & Adishesa, 2021	Psychology		Indonesia	158	21.53	1.21	74.05	Correlational: Cross-Sectional
72	Niu et al., 2022	Psychology	Other	China	764	14.23	1.75	47	Correlational: Cross-Sectional
73	Niu et al., 2018	Psychology	Students	China	986	20.79	1.11	51.22	Correlational: Cross-Sectional
74	Noon et al., 2022	Other Social Science	Emerging Adults	United Kingdom	177	22.12	2.28	74.31	Correlational: Longitudinal
75	Noon & Meier, 2019	Other Social Science	Adolescents	United Kingdom	266	15.22	1.69	55	Correlational: Cross-Sectional
76	Oswald, 2021 (study 1)	Psychology	Students	United States	250	19.4	8.34	62.4	Experimental: without repeated measurement
77	Oswald, 2021 (study 2)	Psychology	Working Adults	United States	161	26.79	2.53	100	Experimental: without repeated measurement
78	Ozimek & Bierhoff, 2020	Psychology		Germany	75	22.33	4.32	77.33	Experimental: without repeated measurement
79	Ozimek et al., 2021	Psychology	Adults	Germany	110	25.52	8.149	79.1	Experimental: without repeated measurement
80	Pang, 2021	Communication	Students	China	318	22.5	0.917	50.3	Correlational: Cross-Sectional
81	Panger, 2014	Computer Science / Information Systems	Other	United States	240			52	Correlational: Cross-Sectional
82	J. Park et al., 2021	Computer Science / Information Systems	Other	Republic of Korea	330	34.05	8.25	51.82	Correlational: Cross-Sectional
83	S. Y. Park & Baek, 2018	Communication	Other	Republic of Korea	331	32.05	12.74	53	Correlational: Cross-Sectional



ID	Study	Discipline	Sample	Affiliation	N	Age (M) <sup>a</sup>	Age (SD)	Prop. of women <sup>b</sup> (%)	Design <sup>c</sup>
84	Richmond et al., 2022	Psychology	Students	United States	109	18.97	1.06	100	Experimental: without repeated measurement
85	Rosenthal-von der Pütten et al., 2019	Other Social Science		Germany	118	22.52	1.88	51	Experimental: with repeated measurement
86	Rousseau et al., 2017	Communication	Other	Belgium	1621	14.76	1.41	48	Correlational: Longitudinal
87	Ruggieri et al., 2021	Other Social Science	Other	Italy	80	32.05	8.01	66.25	Correlational: Longitudinal
88	Samra et al., 2022		Students	Australia	144	20.15	3.94	45	Experimental: without repeated measurement
89	Scherr et al., 2019	Communication		Belgium	841	34.74	13.88	62.8	Correlational: Longitudinal
90	Schmuck et al., 2019	Communication	Adults	Austria	833	45.44	14.83	54	Correlational: Longitudinal
91	Schreurs et al., 2022 <sup>d</sup>	Communication	Adolescents	Belgium	1032	14.55	1.65	57.8	Correlational: Longitudinal
92	Sharma et al., 2022	Other Science	Other	India	726			30.7	Correlational: Cross-Sectional
93	Song et al., 2019	Economics	Students	Republic of Korea	237; 294	23.52	5.87	67	Correlational: Cross-Sectional
94	Spitzer et al., 2022	Psychology	Students	United States	456	19.16	1.61	86.8	Correlational: Cross-Sectional
95	Stapleton et al., 2017	Psychology	Other	Australia	237	23.12	2.17	60	Correlational: Cross-Sectional
96	Steers et al., 2014 (study 1)	Psychology	Students	United States	180	24.41	5.88	78	Correlational: Cross-Sectional
97	Steers et al., 2014 (study 2)	Psychology	Other	United States	154	22.55	4.22	62	Correlational: Longitudinal
98	Tandoc et al., 2015	Communication	Students	Singapore	736	19	2.51	68	Correlational: Cross-Sectional
99	Tandon et al., 2021	Economics	Other	Finland	321	21.5		55.4	Correlational: Cross-Sectional
100	Tobin et al., 2020	Psychology	Other	Australia	188	25.1	10.64	82	Correlational: Cross-Sectional
101	Tosun & Kaşdarma, 2020	Psychology	Students	Turkey	319	20.72	2.48	52	Correlational: Cross-Sectional
102	Tromholt, 2016	Sociology	Other	Denmark	1095	34	8.74	86	Experimental: with repeated measurement
103	Valerio-Ureña et al., 2020		Students	México	86	18.33		59	Correlational: Cross-Sectional
104	van Tran et al., 2022	Economics	Students	Vietnam	318	21		55.7	Correlational: Cross-Sectional

ID	Study	Discipline	Sample	Affiliation	N	Age (M) <sup>a</sup>	Age (SD)	Prop. of women <sup>b</sup> (%)	Design <sup>c</sup>
105	Verduyn et al., 2015	Psychology	Other	Belgium	89	20.23	2.1	61	Correlational: Longitudinal
106	Vogel et al., 2015	Psychology	Students	United States	120	18.93	3.94	77	Experimental: without repeated measurement
107	Vogel et al., 2014 (study 1)	Psychology	Students	United States	145	19.64	2.87	73	Correlational: Cross-Sectional
108	Vogel et al., 2014 (study 2)	Psychology	Students	United States	128	19.08	1.63	73	Experimental: without repeated measurement
109	H.-Z. Wang et al., 2019		Students	China	266	19.77		76.76	Correlational: Longitudinal
110	J.-L. Wang et al., 2017	Psychology	Other	China	696	19.43	1.65	77	Correlational: Cross-Sectional
111	N. Wang et al., 2019	Computer Science / Information Systems	Other	China	318			56.6	Correlational: Cross-Sectional
112	T. Wang et al., 2021	Economics	Adults	Taiwan	144			63.2	Experimental: without repeated measurement
113	W. Wang et al., 2020	Psychology	Adults	China	514	35.42		62	Correlational: Cross-Sectional
114	Weber et al., 2022 (study 1)	Communication		Germany	391	27.5	8.55	70.6	Experimental: without repeated measurement
115	Weber et al., 2022 (study 2)	Communication	Other	Germany	184	27.49	5.6	50	Experimental: without repeated measurement
116	Weinstein, 2017	Other Social Science	Adolescents	United States	507	15.3	1	47	Experimental: with repeated measurement
117	Wirth et al., 2015		Other	Germany	421	38.81	11.52	41.7	Correlational: Cross-Sectional
118	Wirtz et al., 2021	Psychology	Students	Canada	77				Correlational: Longitudinal
119	J. Wu & Srite, 2015		Students	United States	387			42.9	Experimental: without repeated measurement
120	J. Wu & Srite, 2021 (study 1)	Computer Science / Information Systems	Students	United States	109	27		45	Correlational: Cross-Sectional
121	J. Wu & Srite, 2021 (study 2)	Computer Science / Information Systems	Other	United States	376	27		37.5	Correlational: Cross-Sectional
122	J. Wu, 2015 (study 1)	Economics	Students	United States	386				Correlational: Cross-Sectional
123	J. Wu, 2015 (study 2)	Economics	Students	United States	387			43	Correlational: Cross-Sectional
124	Y. Wu et al., 2017	Economics		China	213	22.5		50	Experimental: without repeated measurement
125	C. Yang, 2022	Other Social Science	Students	United States	219	18.29	0.75	74	Correlational: Longitudinal

ID	Study	Discipline	Sample	Affiliation	N	Age (M) <sup>a</sup>	Age (SD)	Prop. of women <sup>b</sup> (%)	Design <sup>c</sup>
126	C. Yang et al., 2018	Psychology	Students	United States	219	18.29	0.75	74	Correlational: Longitudinal
127	Yin et al., 2021	Psychology	Adolescents	China	704	16.8	0.92	57.2	Correlational: Cross-Sectional
128	Yuen et al., 2019	Psychology	Students	United States	312	18.8		79	Experimental: with repeated measurement
129	Zheng et al., 2020	Psychology	Students	China	799	19.86	1.63	100	Correlational: Cross-Sectional
130	Zuo, 2014 (study 1)	Psychology	Students	United States	417	18.96		54	Correlational: Cross-Sectional
131	Zuo, 2014 (study 2)	Psychology	Students	United States	127	20		50	Experimental: with repeated measurement

Note. N = 131 studies. Empty cells indicate that the relevant information is not reported in the paper.

<sup>a</sup> If the mean age was not stated, the mean value was calculated manually (if possible) based on the information given (e.g. age range or age groups).

<sup>b</sup> If the percentage was not stated, it was calculated manually (if possible) based on the absolute values given in the study.

<sup>c</sup> The study design stated here refers to the variables of research interest. If a study used a longitudinal research design, but the relevant variables were only measured at one measurement point, we considered this as cross-sectional or without repeated measures.

<sup>d</sup> At the time of our literature search, this paper was an unpublished manuscript and was included in the review as such. In the meantime, however, the paper has been published and the reference refers to the published version.

**Table A4.**

*Dimensions of Mental Health by Discipline*

Discipline	PTH internalizing	PTH externalizing	PWB Hedonia	PWB Eudaimonia	Risk factors	Resilience factors	Not classifiable	Sum
Communication	7	0	57	8	4	25	3	104
Psychology	36	1	46	9	6	42	1	141
Medicine	0	0	1	0	0	0	0	1
Computer Science / Information Systems	5	0	7	5	3	2	2	24
Sociology	0	0	2	0	0	0	0	2
Economics	6	0	4	0	1	4	0	15
Other Social Science	9	0	10	6	4	8	0	37
Other Science	2	0	1	0	0	1	1	5
Not identifiable	7	0	28	1	2	7	1	46
Sum	72	1	156	29	20	89	8	375

Note. N = 375 indicators. PTH = Psychopathology; PWB = Psychological Well-Being.