

# Master's Thesis

A Scoping Review of TikTok's potential effects on the  
individual user from a psychological and cognitive  
perspective

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# **Abstract**

## **Background**

Mostly focused on teens, both media and research has investigated the social media platform TikTok, which focuses on short-form videos as its content. Concerns have been raised about both its potential ties to the Chinese government in congruence with user privacy in the West, but also persistent worries whether usage of the app poses similar or a different kind of psychological risk as other established platforms such as Facebook, Instagram and X.

## **Objective**

This study follows the PRISMA Scoping Review protocol, to explore the current peer-reviewed literature on the subject to determine if there is cause to worry about TikTok's potential effects based on reviewing the literatures methods, mapping out which authors, countries and journals are most prominent in the research and discovering both the most used keywords in the research, but also the themes that the specific articles delve into and revolve around, as to shed light upon potential positive, neutral or negative psychological effects seen in the included literature.

## **Design**

The Scoping Review search was conducted on the scientific research database Scopus while limited to including research articles from psychological journals, with the requirement of being peer-reviewed English, Danish, Swedish or Norwegian language articles. Articles were per the launch of TikTok naturally limited to be within the timeframe of 2015-2024, which prompted the discovery of 217 articles prior to filtering and later screening, eventually ending up with 46 articles from primarily The United States and China, but also Thailand, Turkey, Canada, Italy, Spain, Chile, Belgium, Austria, Australia, United Kingdom, Bosnia and Herzegovina, Ireland, Macao, Germany, Trinidad and Tobago, Sweden, Portugal, Poland, Peru, Taiwan and Denmark deemed relevant for the answering of the research questions.

## **Results**

With regards to the articles' spread of themes a considerable part of the research (32.61%) were related to the concept of Problematic Use, while the second largest

focus involved a more general focus on the possible effect on user's wellbeing (26.09%). Of the two most prevalent subjects, the third and fourth most present in the included articles were user motivation (19.57%) and exploration of the role of social attachment on smartphone and social media use respectively (15.22%).

Themes regarding the concepts of self-perception and learning engagement/communication were both at a lower percentage (6.52% each), while the last two identified themes of social learning and very operationalized cognitive inquiries amounted to 2 articles each, in the Included 46 articles (4.35% each).

### **Conclusions**

The research on TikTok mirrors a lot of the previous research done on similar social media platforms, with both possibilities and risks being present. As is suggested by the APA, several ethical design choices could be made to avoid some of the risks it poses to especially the mental health of youth. Overall, the platforms' algorithmic and fast-paced design may risk outcomes such as problematic use of the app or depressive symptoms, perhaps warranting looking into the other platforms adopting the short-form video format like Instagram Reels and YouTube Shorts.

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# 1. Introduction

Even though it's still considered a newer internet platform, TikTok is already embedded as part of the larger classification of social media platforms coming with a substantial backlog of negative presuppositions because of the research done on platforms such as Facebook, Instagram and X.com (formerly Twitter.com). Usage of social media platforms has been supposed to act as a potential risk factor for a myriad of harmful mental issues including a possible rise in social anxiety for some of its users and being addictive due to its immersive and encompassing nature. Simultaneously it has been criticized for its potential for negative interactions between its users, one such example can be seen within the role of influencers to promote potentially problematic products to their fans (Shaw et. al., 2015; Brailovskaia, 2018; De Veirman, 2019; Euronews, 2024; WSJ, 2021).

The problematic role these social media platforms are capable of having is especially regarding their younger users, which has led to much discussion of further establishment of regulations. Given this, it might not come as a surprise that a call for additional monitoring and creation of risk-mitigating boundaries was presented in an article by the American Psychological Association, seeing youth as a potentially higher risk group due to having less developed brains. This is seen as leading to potential issues with youth not knowing the full extent of their interactions within the platforms, since some areas of cognitive-, emotional- and social development are not yet deemed proper for the vast, free, and at some level, unregulated designed nature they embody (APA, 2023).

Coming from the opposite side of this discussion, the founder of Facebook, Mark Zuckerberg, expressed to a senatorial committee that these claims are unfounded and cited APA's report of adolescence social media use as evidence, prompting a reply from APA's Chief Science Officer, criticizing Zuckerberg of glancing over the risks they presented and not being more invested in evolving the site in a direction that is safer for younger users (APA, 2023; The Hill, 2024).

In that context, it should not come as a shock that a new social media platform as TikTok has been involved in a much similar case as Facebook, even being on the receiving end of an ultimatum from the US Senate, calling for them to split TikTok

from its Chinese parent company Bytedance, due to concerns of the users' data potentially risking falling in the hands of the Chinese government (Associated Press, 2024). The discussion of potential privacy issues and whether TikTok should be trusted with vast amounts of data of young adopters of the platform, is perhaps intensified through negative preconceptions stemming from geopolitical views and a “better-safe-than-sorry approach” (BBC, 2024; Gray, 2021; Lin & De Kloet, 2023, pp. 1526-1530; Lee & Ng, 2023).

The same has been seen in Denmark, where some Danish companies and the public sector moved to prohibit having TikTok on their work devices (DR, 2023). At a larger scale India ended up going so far as to ban the use of the platform, but based on deteriorating relations with China, coinciding with border conflicts between India and China (Kumar & Thussu, 2023, pp. 1583-1595). Beyond these specific bans, happening to quite specific populations, the question remains to be seen if any regulation will be made barring the usage for youth, who remain able to use the platform unhindered, while the Danish digital watchdog, Digitalt Ansvar, warn that the algorithm on the “For-You” page promotes content revolving self-harm and depressive topics if it matches what is deemed relevant for the user’s interest (DR, 2023; Digitalt Ansvar, 2023). Having these fears might not be as questionable, as the unintended leak of TikTok documents, described how many previously, hard to prove worries, were in fact known by the creators of TikTok Bytedance already (Business Insider, 2021).

It is however relevant to note that while TikTok has especially gained attention for its accurate algorithmically curated feed and short-form style video content, which focus on short clips and videos, for fast entertainment, a similar set of functions are now also present in the iterations offered by Instagram and YouTube respectively called “Reels” and “Shorts” (Gray, 2021).

With regards to the before mentioned social media concerns and broader questions, the present study proceeds with this knowledge as an important background, but putting attention on the specific aspects and features of TikTok and its potential effects on its users, focusing on potential psychological and cognitive side effects to its users leading to the following research question, with four research questions formed to provide relevant information on the scoped-out research (RQ):

To what extent should users of the short-form content app TikTok worry about cognitive and mental side effects from their use of it?

RQ1: How has the psychological literature on TikTok been conducted?

RQ2: Who are the authors, countries and journals present in the field?

RQ3: What are the main keywords associated with TikTok in psychological research?

RQ4: What are the various psychological themes that the literature on TikTok revolves around?

With this, the present thesis is curious about whether TikTok is showing similar effects or perhaps has a more unique effect through its adamant focus on short-form content being displayed in videos cut down as much as possible. Furthermore, there is also an interest in seeing the potential role of the TikTok algorithm, as it has been an integral part of the app's advertised appeal, but also external criticism (New York Times, 2021; The Guardian, 2024).

The chosen research method for this purpose is the usage of a scoping review, guided by the research guidelines offered by PRISMA to structure, review included literature and reporting findings within a transparent and peer-established framework (PRISMA, 2018; Page et. al., 2021). The choice of a scoping review follows a curiosity of whether the decades of prior research on social media platforms covers the potentially unique aspects of a newer platform like TikTok and if the already made research on TikTok is reason enough for worries on the potential psychological effects on users to warrant a larger systematic review. Discussions are already ongoing with some stating we should act now, as the level of evidence wished for, might be impossible to achieve (Digitalt Ansvar, 2023; Altinget, 2024).

With these further descriptions of PRISMA will follow and be included intrinsically in the methodology and methods parts of the paper. For now, it is important to clarify certain concepts and define the concept definitions this masters' works from, which will be a positive way to ensure transparency and avoid writing with a bias on what can be perceived as knowledge taken for granted.

## **1.1 Clarification of Important Concepts**

### **1.1.1 The Format of TikTok Content**

As TikTok was launched on the app platforms of the West, it was seen as a new and unique part of the already established array of social media platforms, grabbing attention with earlier mentioned emphasis on short clips, minimizing gaps of engagement with content and never depleting content or natural stops. This made possible by its usage of the same ground pillars utilized by other social media platforms like Reddit, Instagram, Facebook, offering an endless possibility for scrolling in its interface, auto-playing videos and low barriers of entry as opening the app will present the content instantaneously (APA, 2023; APA, 2024).

While these features are seen as “addictive” in itself, their combination with short-form videos with a length of anything from seconds to a couple of minutes has shown to be an effective way of attracting social media users to adopt TikTok. Furthermore, it seems hard to categorize TikTok fully into the usual social media landscape, as articles display the lack of text based posts, a heavy emphasis on watching videos and the primary interaction potentially being between the user and the personalized-algorithm itself, resulting in identifying with the algorithm and oneself, rather than with others (Montag, Yang & Elhai, 2021; Chao et. al., 2023; Bhandari & Bimo, 2020).

These kinds of features have been criticized by EU committee members, calling for lawmakers to outlaw a variety of potentially addictive features, wanting digital platforms and apps to design their digital worlds with a higher focus on ethics, not built wholly on capturing attention, but instead promoting healthier habits of social media use (Europarl, 2023). In this it is relevant to clarify that social media is not seen as a detrimental potential only, as the members of the committee also describe its potential for both “increasing efficiency”, “accessibility” and “connectedness” (Europarl, 2023). On that note, the following part will go over some of the potential positives and negatives, including points from both proponents and criticisms of the current state of social media platforms.



### **1.1.2 Duality of Social Media**

In the process of being involved in any research being done on social media or reading studies about it, it might be tempting to reject the premise of positive gains to an individual's mental health. As the earlier mentioned introduction described, APA's report on social media was used by Zuckerberg to dismiss some of the criticisms made towards the inner workings of its social media platform. The reason for this being possible is, that the report in itself calls for restrictions to mitigate risk of the harms they see yet also point out that social media is not inherently bad and that it also depends on the user's engagement, sensitivity to potential negative content and age. In this, the report describes uncertainty on whether children necessarily are more vulnerable than adolescents, as the latter usually are in a period of great and rapid changes, perhaps causing them to be more susceptible to any risks typically associated with negative social media usage outcomes (APA, 2023). Yet, as is reflected in the report by APA, the online and the offline world are more intertwined in the younger generations and both the report and other articles show both negative, neutral and positive effects, where one such example lies in the potential for providing safe spaces for certain minorities to engage with peers, not possible in their own country, community or school (APA, 2023; Pacey et. al., 2020; Masood et. al., 2023; Chan, 2023).

With that in mind, it's important to be mindful that as the physical and offline world has both negative, neutral and positive effects from interacting with it, so too is the online space filled with simultaneous potential for good or bad outcomes. This might also be the reason that even as pressure has been applied to the various CEO's of the largest tech companies through US Senate hearings, attempting to link usage of the platforms as a danger for children and youth, the lack of undeniable proof continues to be used as a defense (PBS, 2024). Of course, this stands to be questioned by the previously mentioned leaks, which will be laid out in the following section (Business Insider, 2021).

Following this line of thinking, what areas of the brain, human cognition and social effects could be relevant for researching such harms? Some potentially relevant terminology of these aspects will be brought forth in this following section, which will be the last section of this chapter.

### **1.1.3 The Brain, Key Areas and potentiality for effect socially**

The terminology of potential side-effects of using social media is varied in the literature and cannot be limited to specific areas of the brain, but certain areas have been coupled enough times to show a preliminary worry for the same being a potential case for TikTok as a platform (Montag et. al., 2021; Brailovskaia, 2018).

An often mentioned aspect is the case of feeling a type of reward for scrolling on the platforms, which can sound like a natural product of the enjoyment of consuming content, but in the case of social media platforms, there is often a further design under the visible layer, that enables this sort of feedback to the user of said platform. When talking about TikTok, any potential argument towards this point was supposed to be built upon solely referencing the literature included in the scoping review, without giving a concrete evaluation of the app itself, as it is not possible purely with the wider look the scoping review gives. However, it so happens, which is also mentioned in the introduction briefly, that TikTok's internal documents were subject to a unintentional leak, as they in an attempt to redact certain areas, did not expect that the black redaction markers would disappear when the documents were subjected to a file conversion (Business Insider, 2024).

These documents included sections which described TikTok being aware of the apps addictive design and describing their own tools for limiting children's use of the app as ineffective by their own research into the subject, despite touting these features as a defense in the public (Business Insider, 2024; NPR, 2024). Furthermore, it is described how they are aware of the potential for addictive design, causing individuals to be hooked on scrolling through the short-form content longer than intended. Worryingly, even the needed amount of videos watched to induce a habit in the use of TikTok is known on average and reported by TikTok Exec's in the internal document, which amounts to 260 videos, that in the context of some videos being just 8 seconds long only amounts to 35 minutes of using the app according to Kentucky Authorities (NPR, 2024; Business Insider, 2024).

An article by Koning et. al. on the subject of the tech industry's role also described how the one hour notification, that TikTok knowingly falsely posits as impactful, could be seen as a misleading tactic, not unlike the already established term

“Greenwashing”, leading to them introducing the term “Screenwashing” to describe the perceived similar methods used within the tech industry, hiding the harm done to the individual child instead of hiding the harm done to the environment (2024).

In an attempt to focus on what is visible through trawling published research and not leaked internal documents, the rest of this biological and cognitive description will focus on established research on the brain and how this might be affected by the use of TikTok, as to avoid mixing the unknowns of the research with the supposed findings TikTok has from their own research. When talking about addictive design, it is relevant to discuss the processes going on inside the Ventral Tegmental Area (VTA) as it is one of the primary areas in the brain involved with the role of producing a feeling, conscious or not, of being rewarded for an action/behavior for the user, which here is the potential user of a social media platform. Furthermore, research indicates various other relevant significant roles in this direction, such as motivation and cognition in general. A lot of research on the processes of VTA has been conducted, linking it to being heavily involved in the formation and adherence to addictions, where a majority, 65%, of its structure is comprised of dopaminergic neurons, while later research has been increasing the attention on the simultaneous role of the non-dopaminergic neurons, where GABA neurons might have a potential for being a inhibitory influence for the formation of addiction. Some research indicates that GABA neurons through receiving “inhibitory, excitatory, and neuromodulatory inputs from throughout the brain” might be involved in the integration of various external and internal information, which then regulates behavior (Bouarab, 2019; Morales & Margolis, 2017).

The release of dopamine from the VTA involves, through the firing of dopaminergic action potentials, an effect on the dopamine levels in the Nucleus Accumbens Pathway, which is linked to being a mechanism that leads to the experiences of feeling rewarded and gratified by an action. It might potentially be interactions between these areas of the brain that could be hypothesized to be leading to the supposedly addictive feedback loop that is involved with the usage of TikTok. As the short-form video content does provide a format that is intent on delivering speedy, algorithmic and therefore user-based content that is relevant for the individual user, this might prove to be a combo making use of gratifying the needs of

the user through providing instant and fast dopamine, simply by opening the app on the phone, wherever the user might be. The question is here whether this might attune the brain, through the concept of plasticity, to get used to this more instant sort of gratification that much of daily life does not provide by default (Macit H. B., Macit G. & Güngör, 2018; Elmansouri et. al., 2023; Almachnee & Cozzie, 2022; Pinel & Barnes, 2022, pp. 404-430, 109-118).

With various research and user reports already touching on the potential for effects on the attention span of TikTok's users, it might be relevant background information, as to explain how the brain can get used to certain mechanisms, especially if they provide an easier and faster gratification of what an individual craves on a dopaminergic level (Macit H. B., Macit G. & Güngör, 2018; Elmansouri et. al., 2023; Almachnee & Cozzie, 2022). The potential for neurological change by the usage of screens and apps is also present in a lab experiment by Gawda, Chojak & Korniluk, which showed how potential plasticity changes in participants from Generation Z seemingly led to a higher competency in visual tasks than linguistic ones, which is theorized to be attributed to their increased use of Social Networking Sites (SNS) (2024). As the study from Almachnee & Cozzie describe, social media can influence these exact same centers of dopamine production in ways that can be detrimental to the individual, either through reducing or increasing it, potentially leading to decreased mood levels or addiction (2022).

As the name social media entails, it should be a social experience for the user, which in the case of potential addictions and craving the instant gratification that platforms such as TikTok potentially provides, can pose as an issue for real social interaction. As social life is not as instantaneous and simple in its interaction with wellbeing and dopamine receptors, it could be theorized to be a negative influence on willingness to involve oneself with the real-life situations, as they provide a more complex and a less straight-forward approach to gaining what SNSs can provide at an instant. A study revolving the cultural comparisons between TikTok uses and gratifications by Deng, Vargas-Bianchi & Mensa saw different behavior could be related to the corresponding culture the individual was embedded in, seeing a more social use of collective cultures such as Chile and Spain in stark contrast with the more individualistic-based use by Americans in USA, while Americans were also more prone to self-expression on the app, due to a lower uncertainty-avoidance (2024).

It is important here to realize there might be a variety of positive aspects beyond the ones mentioned in the introduction, which lead to a more nuanced and perhaps more positive view of TikTok, which will be possible through the Scoping Review. In using a Scoping Review, it is important to describe the intentions and methods of the research, as there are visible differences from a Systematic Review. Therefore, the following chapter, titled Methods, will provide an overview of the methodology and specific methodical steps taken to conduct this research study.

## **2. Methods**

### **2.1 Scoping Review**

As described in the introductory sections, the following thesis will base its methodological approach upon the work of the PRISMA guidelines. The reasoning behind this paper's usage of PRISMA's guidelines specifically, is to align the reporting of intention, methods and results with a framework that gives concrete steps and guiding statements to research work that otherwise could be handled in a myriad of ways. Within the process of conducting a scoping review, the intent is to provide a clear and structured description of the current state of the research done on a specific research topic, giving a wider yet sometimes less involved review of the literature in an individual article by article sense. Using PRISMA guidelines specifically for conducting scoping reviews is a newer addition, as the established guidelines for systematic reviews did not exactly reflect the differences of the scoping review in its entirety. Thus, this paper works from the instructions of the PRISMA Scoping Review Extension, formulated clearly in the PRISMA-ScR Checklist (Munn et. al., 2018; PRISMA, 2018; Page et. al., 2021; Tricco et. al., 2018).

The scoping term could in that sense be understood as the researcher maintaining a distance to the much deeper and thorough reviews given in systematic reviews, but not without using this broader view to identify what has been conducted both in regards to methods and findings, as a potential way of discovering what might be missing, often described as “gaps” in the research (Munn et. al., 2018; Westphaln et.

al., 2021; Mak & Thomas, 2022).

On the subject of a newer, yet familiar platform such as TikTok, the research of the much longer established social media platforms inevitably exceeds the articles made on TikTok, but there still exists a potential for familiar, common concepts and perhaps the same potential for harmful effects. As such it lends itself to scope out what research has been conducted so far and understand whether there is a lack of evidence on the negative cognitive and mental effects TikTok is alluded to cause by the previous mentioned reports, or a need for a systematic review to deepen the evidence by analyzing the articles more stringently than the usual scoping review, and actually assess risk of bias at individual article level (Munn et. al., 2018; Page et. al., 2021; McGowan et. al., 2020).

Like the systematic review however, a need exists for a clear and transparent strategy for the conducted searches, as to avoid biases or make it possible for other researchers to at least discover which methods were the potential source of bias. The following section will describe how the scoping review will identify and gain insight into the chosen subject.

## **2.2 Search Strategy**

Due to the nature of having seen previous reports and a vast coverage by the media on TikTok as a platform, it is not realistic to be entirely unaffected by their viewpoints, especially due to articles such as the ones mentioned in the introduction offering a negative prospect before any findings. This is the nature of any research, but impartiality is further problematized on individually conducted projects, which the current study is.

It is here that the search strategy has to be as stringent as possible, becoming a clear lens of discovering and collecting relevant research, utilizing established and subject related databases. Beyond the early free-searches, made in the process of identifying and gaining preliminary insights of the potential of the subject matter, the choice was made on using the most relevant databases.

This led to performing the Scoping Review via a search on the scientific database Scopus, as its broad scale and overall size of scientific catalog encompasses both cognitive, psychological and social aspects in one. The conducted search was

initially made through establishment of the most relevant search terms, finding common keywords used between the databases and creating search strings from this knowledge. However, the search string that was eventually developed by this ended up being much simpler than first anticipated, due to TikTok being a new platform. In the process of formulating and finding terms that would both encapsulate potential positive, neutral and negative results, shown in the research articles, it was decided that a simple Scopus search on the word TikTok, limited by the platform's release year to the current year, while filtering within psychological research provided an amount of articles, feasible for manual sifting with the use of Rayyan. As such, it is the hope that research that might have been excluded in the preliminary search, perhaps by not having the correct search term, will be included in the screening process for further examination. The steps made were the following:

- Early search, process of identifying potential and gaining preliminary insights.
- Finding relevant search terms, establishing common keywords used between the databases and finding out which databases will be used. Ultimately opting for a simpler search on Scopus, but potentially larger manual screening.
- Establishing the broad view needed for scoping review, yet making sure the search isn't too wide, in the sense of irrelevant article numbers being too high, by limiting the search to psychological research.

## 2.3 Search String

In connection with the previous section, the study has formed a very simple search string intended to find potential key studies relevant for the subject and subsequent mapping of the currently published research, while remaining concise and clear enough to avoid excess articles lacking relevance. This has led to the following search string presented in table 1:

Scoping Review - Search Query - Preliminary
TITLE-ABS-KEY ( TikTok ) AND ( LIMIT-TO ( SUBJAREA , "PSYC" ) )

*Table 1*

Through the use of the above-described search query, the resulting found articles will be presented, with a following descriptive model through a flowchart of the preliminary in- and exclusions as prescribed by following the PRISMA protocol for conducting Scoping Reviews, including total articles before and after filtering in accordance with the chosen criteria (McGowan et. al., 2020; Tricco et. al., 2018). These criteria will be presented in the next section, which will extend into the resulting flowchart, based on the established criteria.

## **2.4 Criteria for In-/Exclusion**

The following criteria were decided upon to include as much as possible, seeking a broad and relatively low requirement set of criteria, as the studies of new platforms such as TikTok from the start already limits the potential for overflowing in potential articles.

- When looking at a subject such as TikTok it is relevant to filter out articles made earlier than TikTok was released, which frames the articles within the time period of 2016-2024.
- Studies not in Danish, Norwegian, Swedish and English are excluded, even though potential detailed English abstracts might prove relevant for discussion, since the full text is not possible to read and disseminate.
- Studies should be peer-reviewed to avoid potential issues with articles skewing the overview, possibly due to faults and/or problematic results that have not been subjected to scrutiny by other researchers. Scopus here only contains peer-reviewed studies.
- Studies should be about TikTok, and its short-form contents and algorithm effect on its users.
- Given the degree of studies and the aim to be as broad as possible, case studies and low participant count studies will be included indiscriminately.
- Studies should be journal articles and not handbooks, books, posters, conference articles or dissertations to focus on achieving.



- Studies conducted on a population of users deemed to be involved within the context of covid-19 studies, and the effects related to this will not be included.

These criteria will be present and useful for the screening process, which as described earlier, will be conducted on the research platform Rayyan (Rayyan, 2024). A description of this process will be provided in the following section. Before moving to this, it is deemed valuable to explain and describe some aspects considered about the last criteria on studies within the global pandemic covid-19. The considerations resulting in exclusion of these studies were highly deliberated upon for a while, due to there being 5 articles on this, which within the scope of 217 articles prior to screening is a considerable amount. These 5 articles were after the first screening, still present in the pool of articles, which with 51 amounts to about 10% of the articles deemed relevant for the subject matter. What played into this decision of excluding them, was the unique nature of being affected by social distance measures in a time of a global pandemic, which might prove to create a substantially different experience from use of TikTok outside of a crisis eventually leading to 46 included articles.

Given that the measures of many countries involved measures such as isolation and limited physical social contact, it might show a different potential as a positive coping tool, as the possibilities of interacting in a non-virtual space were less possible. As this is described, it should be considered that the 5 articles show both positive and negative effects, where there is reports of decreased stress levels from TikTok use, compared to other social media such as Facebook and Twitter, which might be an effect of those platforms' simultaneous role as mediums of reading news and potentially negative epidemic-based reports (Grady et. al., 2022). At the same time other articles show increases in social media addiction through TikTok use, mental illness misinformation and an almost contagious tendency to self-diagnosing through relating to these misinformative info on various mental illnesses displayed on the app (Faust et. al., 2024; Marengo et. al., 2022; Frey, Black & Malaty, 2022; Greene et. al., 2023). Despite the potentially interesting findings, it was decided to avoid potentially skewing the data, through inclusion of research, which was

conducted within this context. The screening process that was used for this will be described in the following section.

## **2.5 Screening process**

In the process of performing a search as wide as this study is doing, it is highly advantageous to use a research platform that has features relevant for performing a screening. By screening, it is meant to describe the process of determining which of the found articles in the search adhere to the criteria and are relevant in the work of providing the answers needed for the Research Questions (RQ1-4) (Introduction, Section 1.1).

Due to prior experience with the platform Rayyan, it was decided to stick with their website and its included tools for screening, to avoid having a learning curve and potentially making errors in performing the screening.

Rayyan is an online research platform that provides a vast number of tools based upon the needs of conducting a systematic review. Through its interface, it is possible to file the resulting articles within three distinct categories: Include, Maybe & Exclude. Furthermore, it is possible to add notes to specific articles and use the automatic overarching filters that in the process of importing articles create keywords, based on what the articles are using in their terminology, which will be a good indicator of the general keywords used in psychological research on TikTok. Due to being a solo research project, it is not possible to utilize the option to blind researchers and avoid possible biases for inclusions and exclusions. Any potential prospective systematic reviews following this study should be blinded, if possible, but within the context of a scoping review, it is not assessed to be a problem, as the wish is to form an overview of the research, not critically assess it where the choice of included articles could be a potential issue (Rayyan, 2024).

It is however relevant and necessary to be stringent as an individual researcher with Rayyan, as it is described by Liz Kellermeyer et. al. that Rayyan does not impose a specific and systematic process by design, and that the open and free nature of using its work tools can create a lack of stringency in the workflow in comparison to some other platforms, like the one used by Cochrane Reviews, Covidence (2018). In the

work with the screening of the studies, it was the intention to require a certain amount of quality, despite not conducting formal evaluations of every article. This influenced the process of establishing what articles were even deemed eligible for the preliminary search, which is also described in the next header.

## **2.6 Quality and Evaluation of Studies**

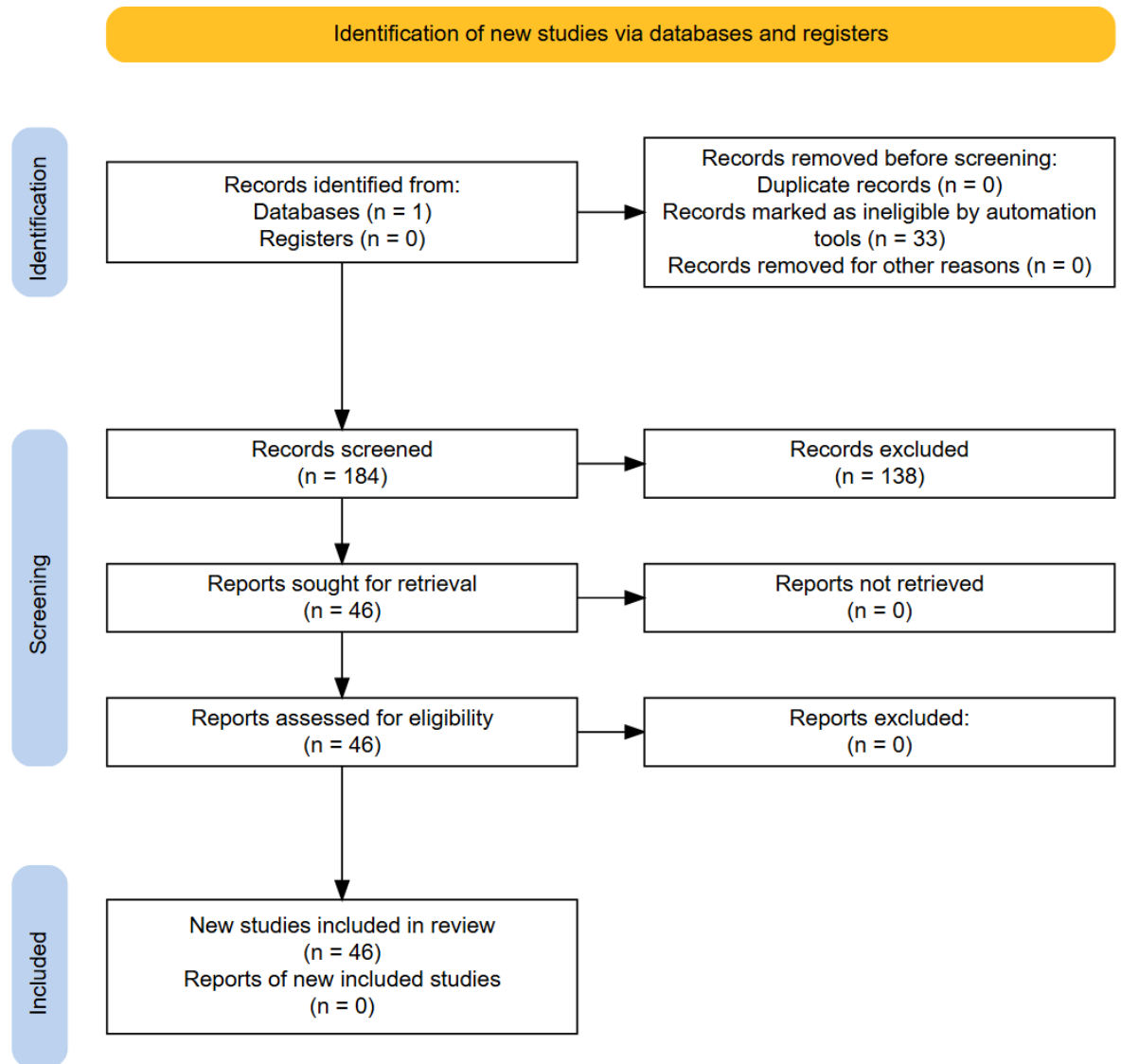
This scoping review attempts to establish a certain level of quality from the onset, as the search methods of this study already from the beginning require studies to be peer-reviewed. This avoids including studies that might seem to be providing very convincing data, which might be showing a unique or higher certainty of scientific evidence of the possible effects of using TikTok. By having the criteria that the articles must be peer-reviewed, it is established that peer researchers have read the articles in depth, so as to provide scientific scrutiny by knowing researchers in the same field. This will be an important factor for providing an overview of the studies, which is based on equally facing critical appraisals. However, it could stand as being a potential bias for the research on TikTok, since the culture of reviewing is performed at a higher occurrence rate within publications from US researchers than is done by Chinese researchers according to Forsberg et. al. (2022, pp. 18-26). This is noted as a potential shortcoming, as TikTok is a platform and app originating from China and the platform as mentioned earlier has the potential of conflicting views based on geopolitical stances. Despite this, the peer-reviewed research should ideally be absent of such biases, which might prove visible in the scoping reviews dissemination of the research's data and synthesis hereof.

To provide an overview of the process made towards obtaining data, it is advised to present it visually, which will be further explained in the following.

## **2.7 Search and Flowchart**

The search process performed on the scientific database Scopus, will per the PRISMA guidelines be presented with a model, providing an overview of the number of articles being inducted and filtered out, in an approachable way. This is

usually done using a flowchart, offering a transparent view into the inner workings of data collection (Tricco. et. al., 2018). The process of creating a flowchart will be done by using the officially recommended PRISMA's 2020 flowchart application called Shiny App (Eshackathon, 2024; Haddaway et. al., 2022). The following flowchart shows the process of data collection and filtering conducted in this study, as prescribed by the PRISMA Flowchart Tool (Haddaway et. al., 2022):



*Model 1*

## 2.8 Data Analysis and Synthesis

The final part of conducting a Scoping Review, is the approach taken to the extract articles with regards to analysis and synthesis of the collected sum of articles, which

is a part of the term “Data Charting” (Tricco et. al., 2018). This process is guided by the objectives of the study, displayed by providing answers to the four research questions, RQ1-RQ4, through analyzing and referencing the chosen articles, forming a synthesis of the data in both its individual parts through the individual articles, but also its collective sum. It is here the intention to attempt to summarize the findings, ultimately finding the potential gaps in the current established research and describe what seems to be conveyed in the research as it stands now (Tricco et. al., 2018).

The synthesis will be presented two ways, first within a table providing a summarizing and descriptive formulation of the study’s findings, and secondly via a narrative synthesis, relating the articles to the four research questions, with a different section for each question, to ease both the writing and reading process.

From this, adhering to the PRISMA-ScR-Checklist, the different concepts, themes and methods seen in the articles will be presented, with the accompanying potential limitations seen within the field of articles and the resulting interpretations from this (Tricco et. al., 2018).

### **3. Results**

With the search conducted, it is possible to describe some background information regarding the articles and answer some of the inquiries into RQ2. With the screening finished, 46 articles were included, as shown in the earlier Flowchart (Model 1). Out of these included articles, there is a clear increase in conducted research following the years after its introduction in the West, with the peak number of articles being published in 2024, with 21 articles. The articles in earlier years were spread as follows: 1 in 2019, 4 in 2021, 8 in 2022 and 12 in 2023.

With regards to RQ2 the spread of countries involved in the included research was wide and varied between different countries of origin, despite China and USA being the largest, with 15 and 14 articles respectively. Germany, Italy, Thailand and the United Kingdom were represented in the research with 3 articles each. Australia, Canada, Spain and Turkey were responsible for 2 articles each, while the countries Austria, Belgium, Bosnia & Herzegovina, Denmark, Ireland, Macao, Peru, Poland, Portugal, Sweden, Taiwan and Trinidad & Tobago concludingly were responsible for 1 article each. Considering both the size of China and USA and their role as

superpowers, both within research and cultural influence, it is not surprising to see them being the primary drivers behind research conducted on TikTok, also perhaps due to the fact that it originated from China and USA has been highly critical of both privacy concerns considering the potential for influence from the Chinese government and the content present on the platform itself (Business Insider, 2024; PBS, 2024). No specific author seems especially influential in the literature.

Lastly, the included articles include 43 articles and 3 reviews. The articles, their titles, authors, methods and findings will be introduced in the following Matrix, to provide an overview of the articles deemed relevant for the present research intent of scoping out the literature on TikTok's potential effect on various aspects of the cognition of individuals that use it. The journals were in general either Psychological, Machine/Computer, Societal and Psychiatry -based, which illustrates the subject's interest within both technological and humanistic research fields.

### 3.1 Included Articles

#	Title	Author and Year	Intention	Methods	Findings
1	Social media misuse explained by emotion dysregulation and self-concept: an ecological momentary assessment approach	Rogier, G., Muzi, S. & Pace, C.S., (2024).	Finding out whether SM misuse can be predicted by emotional dysregulation and identity processes.	Young Adults (N=50)  Measured SM use 4 times per day, 7 days, to measure usage and activities with corresponding rates of emotional dysregulation, self-concept clarity and distress.	Changes in day-to-day SM use were not linked to either emotional dysregulation, distress or self-concept clarity. However, between the 4 measurements per day, SM misuse seemed to be predicted by emotional dysregulation and

					self-concept clarity.
2	Why do people love short-form videos? The motivations for using Chinese TikTok (Douyin) and implications for well-being	Dong, Z. & Xie, T. (2024).	Discovering motivations for using TikTok and its potential effects on wellbeing.	Interviews and several scales were used.  Interviews (N=238)  Use and watching motives scale (N=2263)  Shooting-And-Submitting-Scale (N=3217)  Confirmatory Factory-Analysis (N=2092)	Six Motives were identified for watching: (Seeking Novelty, Habit, Relationship Maintenance, Releasing Pressure, Killing Time, Escapism).  Three motives were identified for creating: (Pursuing fame, recording and sharing and satisfying curiosity).
3	Depressive inclinations mediate the association between personality (neuroticism/ conscientiousness) and TikTok Use Disorder tendencies	Montag, C. & Markett, S. (2024).	Checking applicability of WHO's Gaming Disorders framework on the subject of TikTok Use Disorder.	Questionnaire research on participants using WHO's Gaming Disorder framework. (N=378)	Increased levels of neuroticism predicted a potential link to increased risk of TikTok Use Disorder. Link was mediated by depressive inclinations.
4	Impact of Physical Activity and Bio-Psycho-	Sanz-Martín, D., Ubago-Jiménez,	Establishing knowledge on which platforms	Questionnaire involving university students and	Students used TikTok 2-3 days per week (69%), albeit with low

	Social Factors on Social Network Addiction and Gender Differences in Spanish Undergraduate Education Students	J.L., Cachón-Zagalaz, J. & Zurita-Ortega, F. (2024).	are used, and how use of these vary between genders. Furthermore investigate how age, BMI, physical activity, emotional intelligence and social network type can affect the potential for addiction.	their use of social media platforms. Total (N=414) Male (N=125) Female (N=289) 83.8% were users of TikTok specifically.	addiction rates, which were slightly higher in the female sample. Emotional attention showed increased susceptibility to addiction, with emotional clarity showing the opposite. Age had a negative effect on the risk of addiction.
5	Problematic Smartphone Use among Young People and the Use of Additional Social Networking Software—an Example from Bosnia and Herzegovina	Tomczyk, Ł., Lizde, E.S., Mascia, M.L., Bonfiglio, N.S., Renati, R., Guillén-Gámez, F.D., Penna, M.P. (2024).	Analyzing levels of problematic smartphone use (PSU).	A sample of young people from ages 14-19. Total (N=1024) Male (N=397) Female (N=627)	PSU showed to be more present in girls. 40% of the sample struggled with self-control on smartphone use. Instagram and TikTok were the most used platforms. Frequency of use did not predict PSU however, and a third of the sample showed no PSU symptoms. 17.9% had a high degree of PSU symptoms, which revolve around overuse, lack of



					self-control and high screen time due to its addictive potential.
6	The Use of Instagram and TikTok in Relation to Problematic Use and Well-Being	Hendrikse, C., Limniou, M. (2024).	Investigate how TikTok can lead to problematic use and cause effects for the level of well-being.	<p>Questionnaire including 69 questions.</p> <p>Total: (N=252)</p> <p>80.9% of participants used TikTok primarily and the majority (86.1%) were female. All were over 18.</p> <p>Questions related to demographic data and validated scales revolving around psychological terms such as self-esteem, depression, loneliness and problematic social media use.</p>	<p>Cognitive side-effects such as Time Distortion made users underestimate their usage time.</p> <p>Despite earlier assumptions on users who showed high levels of validation needs, they did not show signs of harm to self-esteem or loneliness through the absence of positive feedback in the study, and likewise on the supposed effect from their followers.</p> <p>Participants might have downplayed the importance of feedback and followers, due to feeling embarrassed.</p> <p>Time spent on TikTok predicted problematic use</p>

					( $p < 0.001$ ), depression ( $p = 0.001$ ) with grade of symptoms being positively related to amount of time spent. Lastly, self-esteem was affected ( $p = 0.012$ ), while loneliness did not relate significantly ( $p = 0.551$ ).
7	Clarifying the relationship between insecure attachment and problematic social media use across platforms: a network analysis	Bai, X.; Zhou, Y.; Lv, X.; Li, J.; Wang, L.; Gao, X. (2024).	Connecting the dots between insecure attachment and PSMU.	Network Analysis done on questionnaires on young adults (N=685)	<p>While negative emotions were linked with insecure attachment, its relationship to PSMU itself was non-significant.</p> <p>PSMU and insecure attachment however, showed a strong interrelated connection.</p> <p>Social Media Use might pose as a coping strategy for emotional distress resulting from insecure attachment.</p>

8	Swiping More, Thinking Less: Using TikTok Hinders Analytic Thinking	Jiang, Q.; Ma, L. (2024).	Exploring the relationship between short-form video content watching and level of analytic thinking capacity.	<p>Two experiments on users of TikTok.</p> <p>Pilot-study showed 56 participants were needed through calculations on sample size needed for significant effect.</p> <p>This led to the study recruiting 72 students from 17-31 (M=22.72), SD= 3.08) with a higher proportion of female participants (58%).</p> <p>The groups were either allocated to scroll on TikTok for 30 minutes, or read an e-book for 30 minutes, prior to the test being conducted.</p>	<p>The group watching short videos on TikTok showed lower levels of analytic thinking, seemingly due to having attuned cognition to the importance of speed instead of accuracy, leading to impulsive and assumptive thinking based on intuition, in comparison to the group reading e-books.</p> <p>Notable features involved in this attunement might be short videos and swipeable interactions combining to become rapidly stimulating content, and engagement with the algorithm being mistaken for enacting one's agency.</p>
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9	The Relationship Between Social Media Information Sharing Characteristics and Problem Behaviors Among Chinese College Students Under Recommendation Algorithms	Sun, Y.; Shan, Y.; Xie, J.; Chen, K.; Hu, J. (2024).	Finding out which role recommendation algorithms pose to users' social media use and resulting behaviors.	Questionnaire on college students (N=34.752)  Students were measured on internal problem behaviors such as depression, anxiety, sleep problems, PTSD and suicidal ideation, while the external problems were attention deficits, hyperactivity, impulsiveness or conduct.	Users on algorithm-based platforms like TikTok displayed higher levels of sharing behavior, but also both internalized and externalized problem behaviors hereof.  The platforms with a lower information speed and sharing degree such as text-based platforms without algorithms showed less potential for problematic effects.
10	Examination of social media usage habits of generation Z	Elkatmış, M. (2024).	Exploring how Gen Z interacts with social media and how it has become an integral part of their lives.	Semi-structured interview with fourth graders aged 9-10.  Total (N=654)  Female (N=310)  Male (N=344)  Questions prompting for duration of time being on social media from 0 to over	44.03% were not on social media yet, while 63.97% were.  16.3% used SM over 3 hours per day (self-reported).  Use was linked with both intends for self-expression, sharing with friends, make friends, get information,

				4 years, and frequency of hourly use from day to day.	<p>communicate, and also personal development. 40.67% of the students were not in face-to-face contact with their followed users.</p> <p>Due to the potential for time distortion effects, the reported usage might be higher.</p>
11	Fast-Forward to Boredom: How Switching Behavior on Digital Media Makes People More Bored	Tam, K.Y.Y., Inzlicht, M. (2024).	Explore social media such as TikTok's role in boredom and how it might intensify it.	<p>7 studies, examining switching behavior, the intent behind it, between videos, and within videos. Probing the believes that boredom might be alleviated by speeding up the consumption of the content, yet at a surface level.</p> <p>Total (N=1223)</p>	<p>Boredom might lead to use of TikTok and other SM platforms. Some of the behaviors, such as switching from video to video, being immersed in the videos and scrolling through the videos themselves to digest them faster, might work opposite on the alleviation of boredom for the user. Meaning decreased when immersion in the specific video lowered.</p> <p>It is concluded that boredom has always been there, but we have</p>

					become more intent on avoiding it.
12	Psychology Tok: Use of TikTok, Mood, and Self-Perception in a Sample of College Students	Barry, C.T.; Berbano, M.-I.; Anderson, A., Levy, S. (2024).	Exploring how use of TikTok can be related to altering levels of stress, boredom, mood and wellbeing.	<p>Participants assigned to either use TikTok, use their device for other uses, or not using a device.</p> <p>Participants were undergraduate students.</p> <p>Total (N=252)</p> <p>Female 69.8%</p>	<p>Lower reported stress after using TikTok for 20 minutes, but also a lower level of “connectedness to others”.</p> <p>The group using devices not on TikTok were more bored and the stress of the group was higher than for the non-screen group.</p> <p>Results may show beneficial effects to stress for short-term, but self-reported FOMO was also reported.</p>
13	A one-year longitudinal study on the mediating role of problematic TikTok use and gender differences in the association between academic	Liu, Q., Li, J. (2024).	Analyzing impact of TikTok use in relation to university studies, with regards to academic stress and procrastination.	<p>University students, aged 17-24 (N=590)</p> <p>Longitudinal study within a year.</p> <p>T1 = Baseline</p> <p>T2 = 6 months after</p>	<p>Time used on TikTok, academic procrastination (T1) and problematic TikTok use (T2) was shown to have an effect between academic stress (T1) and academic procrastination (T3).</p>

	stress and academic procrastination			T3 = 12 months after	A mediating effect was seen only for participants of the male gender.
14	Time distortion for short-form video users	Yang, Y., Liu, R.D., Ding, Y., Lin, J., Ding, Z., Yang, X. (2024).	To discover how a Time Distortion effect can be seen in the use of short-form video platforms such as TikTok.	2 studies.  First study looked at daily use of short-form platforms and its relation to their subjective and the researchers objective measures of time spent on either the platform or a generic survey task.  Second study either had a 15 minute priming involving reading or TikTok use before an academic task.	Higher daily use was shown to correlate with higher time distortion in the direction of overestimation in study 1.  Study 2 had students giving larger estimations on time spent on the task if they were primed with TikTok, indicating an effect of the fast short-form content formula affecting their sense of time.
15	Scrolling through adolescence: a systematic review of the impact of TikTok on adolescent mental health	Conte, G., Iorio, G.D., Esposito, D., Romano, S., Panvino, F., Maggi, S.,	Perform a systematic review to uncover the role of TikTok on the mental health of youth.	The systematic review included 20 studies on TikTok.  Age varied from 2-19 years old.	Four themes were discovered: Impact on mental health, risk of problematic use, behavioral addiction, effect on body image and self-esteem and lastly a

		Altomonte, B., Casini, M.P., Ferrara, M., Terrinoni, A. (2024).		The included studies amounted to 17.312 subjects.	<p>potential “contagion” of psychiatric illnesses due to the mass of this sort of content.</p> <p>The effect of using TikTok is mediated by users' resilience and what kind of TikTok use they engage in.</p> <p>Criticism is put upon the low level of non-cross sectional studies, making it hard to discover longitudinal effects and finding real causal meaning.</p>
16	Problematic use of five different social networking sites is associated with depressive symptoms and loneliness	Williams, M.; Lewin, K.M.; Meshi, D. (2024).	Exploring how depressive symptoms and feelings of loneliness can be connected to having a problematic use of different social media platforms.	<p>Survey study across 5 platforms (Facebook, Instagram, Twitter, Snapchat, TikTok) with undergraduate students:</p> <p>Total: (N=601)</p> <p>Male: (N=206)</p> <p>Female: (N=395)</p>	<p>All 5 platforms were shown to have a correlation between problematic use and depressive symptoms and feelings of loneliness (<math>p &lt; 0.001</math>) and higher usage predicted higher negative consequences.</p> <p>However, interestingly the degree of feeling</p>



					loneliness was mediated negatively the more platforms the user was on, potentially showing a social gain with more platforms.
17	Recommended for You: Explicit Motivations and Recommender Systems Influence Users' Media Engagement and Well-Being	Chapman, H.; Abraham, A. (2024).	Discovering how motivation coupled with algorithmic based platforms can influence the users' use of a platform and wellbeing.	Online survey on use of algorithmic platforms such as HBO, Netflix, Youtube and TikTok with their users.  Total: (N=339)	The algorithm seemingly affected their platform use and emotions, which in turn led to higher interest in engaging with personalized systems, through the perception that it is useful for the user. The length of content being recommended also seemed to affect the user's interest.
18	How do social and parasocial relationships on TikTok impact the well-being of university students? The roles of algorithm awareness	Wang, X.; Shang, Q. (2024).	Finding out how TikTok can cause social and parasocial relationships, which might act as a negative factor for wellbeing and use	Self-report surveys with university students.  Total: (N=379)  With a male percentage of 43.3%  (Mage=19.80, SD= 1.49)	With regards to correlation, Parasocial Relationships and FoMo were present in the sample at a moderate degree, Algorithm Awareness and Fatigue were present at a high

	and compulsive use		marked by low self-control.		<p>degree, while Compulsive Use and Life Satisfaction were moderately present.</p> <p>Life Satisfaction however, was not involved in any of the other factors.</p>
19	Feeling phony online – The impostor phenomenon's link to online self-presentation, self-esteem, and social network site use	Ibrahim, F.; Herzberg, P.Y.; Stöven, L.M. (2024).	Exploring the concept of imposter feelings in the context of social media use, self-esteem and the presentation of one-self.	<p>Survey study conducted on an online survey platform.</p> <p>Total: (N=544)</p> <p>Male: (N=249)</p> <p>Female: (N=289)</p>	<p>The imposter predicted both the presentation of ones online self on the parameters of adaptable- and authentic self, and the perception of freedom of self online, all at (<math>p&lt;0.001</math>).</p> <p>Higher imposter feeling were attributed to cause lower authenticity and higher self-adaptation online, which also led to feeling more inclined to the online communication space, due to its obvious possibilities of adaptation and freedom of self-presentation.</p>

20	Social media as an incubator of personality and behavioral psychopathology: Symptom and disorder authenticity or psychosomatic social contagion?	Haltigan, J.D.; Pringsheim, T.M.; Rajkumar, G. (2023).	Delving into the usage of social media in relation to personality and behavior, with a focus on contagion of psychiatric psychopathology.	Theoretical work, referencing prior articles and proposing an early model viable for investigating the subject.	Platforms such as TikTok might serve as a form of spreader for self-diagnosed or pseudo mental illnesses. Further research is recommended by the author, to investigate how TikTok can posit an influence on an individual's mental health, or perception of such. The diathesis-stress model is proposed as a potential model for understanding how certain people can be more prone to these dangers.
21	Taking a One-Week Break from Social Media Improves Well-Being, Depression, and Anxiety: A Randomized Controlled Trial	Lambert, J., Barnstable, G., Minter, E., Cooper, J., McEwan, D. (2022).	Research on the potential effects of social media on psychological concepts such as wellbeing and psychiatric illnesses such as depression and anxiety.	Study with participants randomly allocated to either stop SM use or continue. (N=154) (Mage=29.6 Facebook, Instagram, Twitter and TikTok were	The reduction of self-reported time use on SM predicted improvements in both symptoms related to anxiety, depression and well-being. But also mediated by lower TikTok use by itself.

				the involved SM's.	
22	The addiction behavior of short-form video app TikTok: The information quality and system quality perspective	Qin, Y., Omar, B., Musetti, A. (2022).	Discovering the potential for addiction from using TikTok, and its potential causes.	Study uses the Stimulus-Organism-Response model to explain TikTok grip on adolescents.	Enjoyment, time distortion and concentration were seen as predictive factors for addiction, with both the quality of the content and the TikTok systems playing a role, together with the experience of "Flow". The personalized algorithm and fast videos are seen as the mechanism enabling this.
23	The impact of #beauty and #self-compassion tiktok videos on young women's appearance shame and anxiety, self-compassion, mood, and comparison processes	Seekis, V., Kennedy, R. (2023).	Finding out how certain "looks" focused videos on TikTok can have an influence on young womens' self-image, comparison to others' looks and psychological terms such as anxiety and mood.	Undergraduate women randomly assigned to TikTok videos on beauty, travel, or self-compassion techniques.  Total: (N=115)  Measures of appearance shame, anxiety, self-compassion and mood were taken pre- and posttest.	The group watching beauty content had a negative effect on all 4 measures in comparison to the other groups and also displayed a higher level of comparison and thoughts associated with perceiving individuals as being more beautiful.

24	Algorithm-mediated social learning in online social networks	Brady, W.J., Jackson, J.C., Lindström, B., Crockett, M.J. (2023).	Exploring how algorithms play a role in social learning on social media platforms.	Theoretical review of data and models on information and social learning on TikTok, Facebook, Twitter and similar platforms utilizing an algorithmic approach.	<p>The algorithms use aspects of the social learning bias, to amplify content based on being moral, emotional or political, which in turn leads to users risking adopting social misconceptions and misinformation through its high saturation in ingroups and user-algorithm interactions.</p> <p>Content creators are especially regarded as possible role models due to their higher status.</p>
25	Depression and social anxiety in relation to problematic TikTok use severity: The mediating role of boredom proneness and distress intolerance	Yao, N.; Chen, J.; Huang, S.; Montag, C.; Elhai, J.D. (2023).	Discovering if there is a link between depression, social anxiety and the degree of problematic use of TikTok.	<p>Study recruited users for online survey. (N=822).</p> <p>Two assessments were made on symptoms, resilience and problematic use of TikTok, with 2 months inbetween T1 and T2.</p>	Low resilience to distress predicted problematic use, as well as depressive and anxiety symptoms.

26	Using TikTok for public and youth mental health – A systematic review and content analysis	McCashin, D.; Murphy, C.M. (2023).	To investigate how TikTok has been and can be used for public and youth mental health.	Assessments of studies and the practice of using TikTok's platform for public and youth mental health awareness through content analysis of official, non-profit and individual's created content.	More mixed-methods research is needed, but TikTok has the potential to be used by practitioners to spread knowledge to an audience of youth and provide the level of quality not always seen in mental health content made by independent content creators.
27	Social comparison and problematic social media use: Relationships between five different social media platforms and three different social comparison constructs	Lewin, K.M., Ellithorpe, M.E., Meshi, D. (2022).	Finding out how social media use on a problematic level, can be a driver for social comparison on the platform.	Online survey on undergraduate students. Total (N=601) Male (N=206) Female (N=395) Questions about problematic use and social comparison across 5 platforms: Facebook, Instagram, Snapchat, Twitter, TikTok	Social comparison of ability was associated positively with PSMU for all platforms ( $p<0.001$ ).  In turn, willingness of social comparison of opinion showed negative association problematic use for all platforms ( $p<0.01$ ), except TikTok and Snapchat ( $p>0.05$ ).

28	Instagram and TikTok Flow States and Their Association with Psychological Well-Being	Roberts, J.A.; David, M.E. (2023).	Exploring how platforms such as TikTok can lead to so-called “Flow States” and how these may be a negative factor for the wellbeing of the individual.	Online survey on adults. (N=420)  Looked at states related to “flow”: focused attention, enjoyment, curiosity, telepresence and time distortion.	Five outcomes were found: FOMO, mind wandering, social media addiction, amount of time spent on social media and anxiety and depression.  TikTok users showed increased levels of experiencing flow, time distortion, but also enjoyment, while also showing higher depressive, anxious, addiction symptoms, as well as a higher overall time spent on the platform.  The intense immersion and flow experience might be related.
29	FOLLOW FRIENDS ONE HOUR A DAY: LIMITING TIME ON SOCIAL MEDIA AND MUTING STRANGERS	Hunt, M.G., Xu, E., Fogelson, A., Rubens, J. (2023).	Understanding social media use in relation to the potential for focusing on strangers instead of actual friends, which if reversed	Survey on university students.  Total (N=182)  Male (N=53)  Female (N=129)  Wellbeing was measured by	Depressive individuals saw reductions in depressive symptoms after limiting social media use for 4 weeks.  Limit: 60 minutes per day, showed positive effects for wellbeing not

	IMPROVES WELL-BEING		might lead to improved well-being.	using validated scales on: FOMO, loneliness, depression, self-esteem, social comparison.	displayed in the control group, showing that limitation and not just total abstinence can be effective for well-being.
30	Addiction to social networking sites: Motivations, flow, and sense of belonging at the root of addiction	Miranda, S., Trigo, I., Rodrigues, R., Duarte, M. (2023).	How the addictive potential of social media sites are related to the earlier mentioned flow state, sense of belonging and the individuals motivation for use.	Survey study, not on students, and open for all ages.  Total (N=664) Male (N=78) Female (N=561)  Motivations for using TikTok was used (Escapism, Social Interaction) to look into its interplay with common TikTok states (Flow, Sense of belonging) and these 4 factors were all analysed in their interactions, aswell as in relation to the outcome (Addiction).	Motivations of use were shown to play a part in the development of addictions. At the same time, flow and a sense of belonging to the platform, was also displayed to have an effect on the development of addiction.  Thus, development of addiction can be seen as a process influenced by an array of different interplaying factors.



31	Which social media platforms matter and for whom? Examining moderators of links between adolescents' social media use and depressive symptoms	Gentzler, A.L.; Hughes, J.L.; Johnston, M.; Alderson, J.E. (2023).	Understanding social media motivations for use, userbase demographic and how social media use in an adolescent population may lead to depressive symptoms.	Study looked into adolescent use of SM platforms with a baseline and following study a year apart. Total (N=237) 51.1% Female Socioeconomic background were accessed on a scale (1-10), which showed a wide variance albeit majorly in the upper part of the spectrum (2-9, M=6.31, SD=1.42).	Time spent on the platforms showed a higher degree of depressive symptoms for the platforms of TikTok, Instagram and YouTube.  The risk is deemed to be related to the individual's resilience and personality, indicating that some users are more prone to being affected mentally by social media.
32	Self-perception evolution among university student TikTok users: evidence from China	Zhu, J., Ma, Y., Xia, G., Salle, S.M., Huang, H., Sannusi, S.N. (2023).	Exploring the possibilities of TikTok use to lead to changes in university students' self-perception.	Interviews done on students. (N=33)  The focus is on both theory, empirical descriptions from the students and how the interactions can be managed.	The symbolic interactions on TikTok can change the individual's self-perception positively, but also the perception of others. While this potential exists, it is also noted that there is a need for regulating the online world to facilitate these positive symbolic interactions and

					promote being aware of one's presence in the online world.
33	Relationship between perceived social media addiction and social media applications frequency usage among university students	Allahverdi, F.Z. (2022).	Outlining the relation between the degree of use of social media apps and their potential for addiction.	Survey study with university students  Total (N=322)  64% Female  Students were either engineering or social science.	Variations of gender and study status played a role in the perception of being addicted, but results only showed significance for the use of Twitter, Facebook and Instagram.  About 5% higher rate for females and 5% higher rate for social science students than engineering, indicating studying social science might shape one's perception of being addicted, although not in relation to TikTok in the study.
34	Development and Validity Test of Social Attachment Multidimensional Scale	Yang, M., Suanpong, K., Ruangkanjanases, A., Yu, W., Xu, H. (2022).	Investigating the viability of a social attachment scale related to explaining	Questionnaire on avid social media users.  (N=21)  Social attachment, social	Social identity was the primary reason for engaging with a platform, showing its importance and role in continuous use behavior.

			<p>platform use.</p> <p>The study wants to understand the social attachment to platforms, to use it for marketing and find out what factors matter for sustained use.</p>	<p>dependence and social identity were used as factors in the analysis.</p>	<p>The potential for self-expression is a large factor for use.</p>
35	<p>Needs affordance as a key factor in likelihood of problematic social media use:</p> <p>Validation, latent Profile analysis and comparison of TikTok and Facebook problematic use measures</p>	<p>Smith, T., Short, A. (2022).</p>	<p>To compare TikTok and Facebook in its tools to avoid problematic social media use and discover possible reasons behind developing this kind of use.</p>	<p>Survey conducted on students.</p> <p>TikTok (N=173)</p> <p>67.3% Female (Mage=23.61)</p> <p>Facebook (N=313)</p> <p>62.1% Female (Mage=26.15)</p> <p>Ages ranged from 18-64.</p> <p>Scales used were Bergen Facebook Addiction Scale (BFAS).</p> <p>Problematic TikTok Use</p>	<p>The use and problematic use of TikTok has a potential unique effect compared to Facebook and poses a deeper risk of adopting maladaptive cognitive behaviors. Both intensity of use and symptoms are higher on TikTok compared to Facebook.</p> <p>Mean Minutes spent: TikTok (M=106.69 min)</p> <p>Facebook (M=63.82 min)</p>

				<p>Scale (PTTUS).</p> <p>Both scales ranged from 0-24 in addiction symptoms, through 6 questions with answers from 0-4 (Very rarely-Very Often).</p>	
36	<p>Personal and social guidance in children's development. How youth personalize and (re)construct digital TikTok-practices</p>	<p>Larsen, M.N. (2023).</p>	<p>To discover how collective and personal meaning-making processes collide between children, TikTok and adult staff in a Danish Youth Club.</p>	<p>Interviews with children and adult staff.</p>	<p>The study encountered some of TikTok's sexually charged dances being seen as obscene by the staff, while children did not attribute these same meanings to the trend.</p> <p>The adult explaining the trends' obscenity lead to potential ruptures as children become inducted into the adult meaning.</p> <p>Inversed, the trends also had children explain content to adult staff, due to its unique ingroup meaning.</p>

37	The contributions of gender identification and gender ideologies to the purposes of social media use in adolescence	Manago, A.M., Walsh, A.S., Barsigian, L.L. (2023).	Finding possible interactions between gender subjects and social media use in youth.	Survey on adolescents Total (N=309) (Mage=15.74) 59% Girls	Girls' use of social media saw a deeper focus on emotional aspects, compensation of social needs and appearance validation, in comparison to the Boys' use.  TikTok was used more by girls and Discord was more popular with boys.  Boys were more engaged with competitive-based activities, compared to the girl's needs, showing difference in motivations for social media use between genders.
38	Exploring effects of intelligent recommendation, interactivity, and playfulness on learning engagement: An application of TikTok considering	Wang, S., Yang, D., Shehata, B., Li, M. (2023).	Exploring how algorithms and TikToks design can have an effect on anxiety and the feeling of reward.	Survey study on users of short-form video applications Total (N=502) 55% female 73.9% were 20-23 years old.	Ease of use, learning, satisfaction, usefulness and algorithm-based recommendations were some of the facilitators for using the apps, as was the feeling of a virtual form of reward from engaging with the app.

	the meditation of anxiety and moderation of virtual reward				The study sees these factors as beneficial for a learning context, where a platform such as TikTok might be beneficial to use for learning engagement.
39	What drives me to use TikTok: A latent profile analysis of users' motives	Gu, L., Gao, X., Li, Y. (2022).	Understanding the reasons for using TikTok, through motive analysis.	<p>Study on TikTok users. (N=384) (Mage= 27.74)</p> <p>Age ranged from 17-58.</p> <p>Measurements of motivation were done from 1-5 (totally disagree-totally agree).</p> <p>Four subscales based on social rewards for self-presentation, novelty, escapist addiction and trendiness.</p>	<p>TikTok might benefit from different recommendations based on motives for use.</p> <p>Novelty and escapist addiction, which can be seen as a coping strategy, are motives seen in individuals of higher risk than the users focused on social connection and self-expression through posting indicating the potential benefit of measures barring some users from content that impairs their mental well-being.</p>

40	<p>“TikTok Is My Life and Snapchat Is My Ventricle”: A Mixed-Methods Study on the Role of Online Communication Tools for Friendships in Early Adolescents</p>	<p>Mittmann, G., Woodcock, K., Dörfler, S., Krammer, I., Pollak, I., Schrank, B. (2022).</p>	<p>Establish what role social media plays for the younger generations and their friendships.</p>	<p>Survey and focus group on social media users.  Total (N=938)</p>	<p>Not having a phone at early adolescence may lead to exclusions from peers, both in activities and connectedness.</p> <p>The study sees problems with social media, while also establishing its engrained status, even at young ages in high socioecological countries, indicating a need for thoughtfulness in interventions, which might be conducted within the online space they feel safe in.</p>
41	<p>Enabling and Inhibiting Factors of the Continuous Use of Mobile Short Video APP: Satisfaction and Fatigue as Mediating Variables Respectively</p>	<p>Huang, L., Dong, X., Yuan, H., Wang, L. (2023).</p>	<p>Discovering potential factors for and against using short-form video apps.</p> <p>The intention is here to promote use, for business purposes.</p>	<p>Survey done on TikTok app users.  (N=681)</p>	<p>Negative factors for use are information overload and communication overload, as it leads to fatigue, while the enabling aspects are based on mechanisms of the app, its perceived usefulness and social influence.</p> <p>The study finds that reducing</p>

					fatigue in app use could lead to higher continuous use.
42	What Is Influencer Marketing and How Does It Target Children? A Review and Direction for Future Research	De Veirman, M., Hudders, L., Nelson, M.R. (2019).	Finding out how influencers and their marketing pose a problematic issue for its marketing towards children.	Review of influencer research	<p>Children view an increasing amount of advertisement through social media content.</p> <p>Studies focus on YouTube, while TikTok has not been explored as much, which might just be due to release date and studies included being prior to a wider adoption and accompanying research.</p>
43	Understanding the Mechanism of Social Attachment Role in Social Media: A Qualitative Analysis	Yang, M., Zhang, W., Ruangkanjanases, A., Zhang, Y. (2021)	<p>Exploring the role of social attachment in the use of social media.</p> <p>Based on business intents.</p>	<p>Interviews done on participants.</p> <p>Total (N=27)</p> <p>Questions were based on usage behavior, experience with usage and relationships between users, but also between user and platform.</p>	<p>Continuous use is heightened for users with a social attachment to a platform.</p> <p>Individual and co-creation is a factor for stimulating social attachment to a social media platform.</p> <p>Interactions are seen between the experience of watching content and the users'</p>



					mood and emotions, while psychological needs can be formed in this context.
44	Explaining the success of social media with gratification niches: Motivations between daytime, nighttime and active use of TikTok in China	Scherr, S., Wang, K. (2021).	Research on how social media gains its viewership from gratifying a niche for its users.	Online survey done on participants.  Total (N=1051)	<p>TikTok is unique for being a social platform that originated outside of the Western world.</p> <p>Self-presentation, addiction to escapist behavior on the app, novelty motives and trendiness seem to be the primary motives.</p> <p>The addictive nature of the apps' design might however warrant further discussions of mobilizing resources towards safe use.</p>
45	Life History Strategies and Problematic Use of Short-Form Video Applications	Wang, X., Zhao, S., Zhang, M.X., Chen, F., Chang, L. (2021).	Exploring the potential link between one's life and having a problematic use pattern of short-	Survey done on TikTok users.  (N=376)	<p>Life history might play a part in the problematic use of short-form video content platforms.</p> <p>Specifically, a life history of "fast strategies" seems</p>

			form video content platforms such as TikTok.		to predispose the user to the development of problematic use, in a way that is not seen in users with slower life history strategies.
46	TikTok: an exploratory study of young adults' uses and gratifications	Vaterlaus, J.M., Winter, M. (2021).	To investigate how young adults use and gain personally from their use of TikTok.	Online survey on users and non-users Total (N=247) 52.6% Female Ages 18-25 (Mage= 20.95, SD= 2.10). Users (N=128)	Users saw both gratification through social connection and the entertainment value.  Social value was seen in the sharing of content with friends, family and partners, or watching it together, as well as in the perceived communities on TikTok.  Some non-users found the content a waste of time, based on its immature status as an app for children, due to its trends and focus on attention-seeking.

*Table 1*

### 3.2 Narrative Synthesis

With the Matrix performed and presented, it is relevant to turn to performing a narrative synthesis, which entails performing a more pedagogical and narrated approach, with the intent to both categorize, compare and analyze the included articles, as a way of creating a summarized and meaningful collection of what is seen in the literature, on the topic of TikTok's perceived effects, uses and overall themes discussed in the present research. This will be done through sub-sections, established in accordance with both the themes present in the literature and the intents of the Scoping Review, displayed in Research Questions RQ1, RQ3 and RQ4, as RQ2 was already answered in the Results section.

RQ1 was here intended to present how the different studies were conducted, with regards to both the methods and terms used to investigate the effect of using TikTok on psychological and cognitive aspects. From the aforementioned Matrix, it is quite clear that while a few articles, such as the two purely based on cognitive aspects were conducted in a lab setting, the vast majority of the included research were based on empirical data collected through either surveys, online or physical, interviews or a combination of the two, with data being presented from both quantitative and qualitative methodology. This might be due to the ease of conducting large scale survey studies, especially with the use of internal psychology students or similar student populations, where it could be argued that more research based on experiments in a lab environment would be a substantial asset for the understanding of the concrete effects that might be a result of the use of TikTok or similar short-form video apps.

Given the potential for both stress reduction, coping and escapism behavior, and an overhanging risk of addiction, depressive symptoms often related to problematic use, it can be hard to determine if the users of TikTok generally see a net gain or net loss from their use. Since the survey methods depend on self-reported data it can also lead to conflicting or otherwise complex feelings of one's own use of the app. It could, in relation to the mentioned potential issues, be interesting to see more very effect-specific lab studies and if relying on continued survey studies, making sure that the sampled participants are composed of a less potentially homogeneous group. This might prove to be a larger factor for the answers than estimated, given that the

only study intended to investigate such differences between students, by the researcher Allahverdi, showed clear differences in both the effects, but also the individual users' perception of these effects of using social media platforms (2022).

### **3.2.1 Psychological Themes**

As seen in the Matrix, a big part of the studies are involved with the addictive risks TikTok provides as a platform, through their combination of intelligent algorithms, flow states and effective gratification of a variation specific user needs. This is often described in the literature as "Problematic Use", a term often categorized by high use, lack of control and a negative outcome mentally stemming from the use.

This is seen in many different articles, where the first to be introduced is research by Sanz-Martín et. al. (2024), that explores which factors play into user's becoming addicted to a social media platform. They found higher age was a resilience factor for risks of addiction, with emotional attention leading to higher risk, while emotional clarity showing the opposite. Similarly, Qin et. al. (2022), saw that high attention, enjoyment and also the cognitive term Time Distortion predicted a potential addiction, while also arguing that both the quality of displayed content and the apps' highly effective design also worked as contributing factors for the outcome of evolving an addiction. Time Distortion was also deemed a factor in the case of Hendrikse & Limniou (2024) for higher use, and in the case of this study, both PSU, depression and self-esteem was shown to be affected at a higher rate, when usage of the app increased. The reverse, depression prior to problematic use disorder, is shown in Montag & Markett (2024) where using WHO's Gaming Disorder Framework on TikTok seemed promising, showing depressive symptoms and level of neuroticism being predictively of the development of what is described as TikTok Use Disorder.

When moving to look at the study by Smith & Short (2022), TikTok's design might have an increased risk through this design, as they in comparison between Facebook and TikTok record more intense symptoms and usage times on TikTok in problematic use, with the average mean use in minutes being very different on the two platforms Facebook (M=63.82) and TikTok (M=106.69) (Smith & Short, 2022).

It is important to consider that higher use was not shown to predict addiction, which is also seen in the study of Tomczyk et. al. (2024), where frequency of use did not predict the formation of problematic use, 17.9% showed symptoms of PSMU in their sample of 1024 young people and a third displayed no symptoms of PSMU.

Regarding what might then be a factor of predicting problematic use, a study by Bai et. al. (2024) found a stronger link between PSMU and insecure attachment, than negative emotions and PSMU, while Yao et. al. (2023) conducted a study which seemingly showed how low resilience to distress might influence both depressive and anxiety symptoms, but also the occurrence of PSMU. Another study, by Lewin et. al. (2022) instead focused on the aspect of social comparison, where the comparison of one's ability socially, was shown to be positively associated with the development of PSMU.

Showing how this intense amount of use may lead to further negative outcomes, Gentzler et. al. (2023) survey study, found higher time use of the platforms TikTok, Instagram and YouTube predicted worse outcomes of the degree of depressive symptoms, while also identifying potential resilience factors like the study of Sanz-Martín et. al. (2024), yet more based on the individual's personality and not just age, also indicating how different outcomes might occur between individual users. Higher time use on the app was interestingly also correlated with worse outcomes in the study from Williams et. al. (2024), where both TikTok, Instagram, Facebook, Snapchat and Twitter had a significant correlation between PSMU, symptoms of depression and feeling lonely.

Further identifying less obvious resilience factors, was successful for Allahverdi (2022), when seemingly two samples of engineering and psychology students displayed a higher self-reported addiction rate in the case of the psychology students by about 5% and with another 5% higher rate in the female part of the sample. While this might be the case on TikTok as well, the present study only found this significant on other platforms, although it brings an interesting perspective to the multilayered factors that potentially play into the individual's resilience. When pivoting to the factors related to the development of these addictive mental states however, indications from the study of Miranda et. al. (2023) display how factors like motivations for use, such as flow-state and the individual's social attachment to

the app, can be the ones causing the risk of addiction, through their sense of need and immersive interaction with the app, not unlike what Roberts & David (2023) finds, with the addition of time distortion. This might not only be the case with social attachment, but also social and para-social relationships, which Wang & Shang (2024) finds might lead to compulsive use, as concepts like FoMo might drive user's to sustained use, heavily characterized by low self-control.

It's also important to understand that any given addiction almost never exists in a vacuum, in the sense that it often relates to, and negatively affects the surrounding life of the addicted individual. In a study by Liu & Li (2024), it is shown through testing baseline (T1), after 6 months (T2) and after 12 months (T3) on university students using TikTok, that problematic use intensified the level of academic procrastination from T1 to T3, displaying how it might interfere with their real life and aspirations. Further mental effects such as aspects of psychological wellbeing will be displayed in the next section.

Given the occurrence and outcomes of PSMU rarely stand alone, it is also important to investigate the studies that revolve around how TikTok use might risk having an effect on the individual's general mental health. One such study by Rogier et. al. (2024) also shows how this problematic use can be initiated from the individual's mental state, showing how dysregulated emotions and self-concept clarity prior to use also affects the use itself, even within the individual's use during the day. This case of using TikTok as a coping strategy might not be unfounded, as Barry et. al. (2024) saw lower stress in their group who used TikTok for 20 minutes prior to testing, in comparison to both users who were allocated to generic phone usage and non-screen users. Despite this potential for short-term beneficial effect, it was also recorded that this stress reduction was accompanied with a lower level of feeling connected to others, which might be an indication that its immersive flow becomes an escape from one's surroundings, while stress levels of the participants not on TikTok might be affected by the self-reported FoMo that they reported afterwards (Barry et. al., 2024). Another study using a similar kind of priming, showed that the group who watched beauty content before conducting a test meant to test levels of social comparison, saw a negative effect on their self-image, but also led to higher

comparison rates with increased thoughts of individuals perceived as more beautiful, detrimental to their mood level (Seekis & Kennedy, 2023).

This effect ends up working as a sort of contagion, where watching the content alters their perception of themselves and their appearance. But it might not be limited to worries of appearance, as some studies, such as the systematic review by Conte et. al. (2024) and the theoretical analysis by Haltigan et. al. (2023) describe how there alongside risks of PSMU, body image and self-esteem, exists a potential for psychiatric illnesses being portrayed in a certain way on TikTok and other platforms, that might lead to “contagion” of them. Meant in the sense that users might either falsely or correctly identify themselves as having that mental illness, which combined with that style of content's popularity, risks becoming psychosomatic, depending on the user's resilience (Conte et. al., 2024; Haltigan et. al., 2023). This might be related to misidentifying individual symptoms as a result of an undefined and undiagnosed mental illness, although several symptoms can appear outside a diagnosis, in even individuals of an otherwise normal mental health state (Harrison et. al., 2018, pp. 2-6, 22-34). Ultimately, such judgements and assessments should regardless of platform and potential creator be conducted in accordance with the diagnostic criteria and systems such as ICD-11 and DSM-5 by professional mental health workers (Harrison et. al., 2018, pp. 22-95).

The research provided thus far might prompt discussions of possible interventions, which might not be as straightforward as one would otherwise think. As Mittmann et. al. (2022) discovers through surveys and focus groups, not being on social media might offer to become a reason for exclusion between peers, while it might especially be a very ingrained way of communicating and connecting with friends for the youth, which in their opinion warrants being considered, when conducting interventions. Expression of self, authentic or not is also taken into account by Ibrahim, Herzberg & Stöven (2024) to be a factor for some users, even leading to adopting an online-specific identity, increased by the individuals imposter feelings, showing the precarious ways social media platforms might offer both connection with friends on an authentic level, yet also become a space of presenting yourself as something you're not in the physical world. This potential is also present in the study of Zhu et. al. (2023), where significance is put on the symbolic interactions that

happen on social media, as well as advocating for regulating these spaces so these personal changes stemming from social media use can be pushed towards being a positive change.

Even then, and despite this potential, the online world is still hard to classify as good, neutral or bad, but research focused on intervention, like shown in Lambert et. al. (2022) and Hunt et. al. (2023) show reductions in depression, anxiety and wellbeing simply by taking a one-week break in the case of Lambert, or as seen in the latter study, limiting use to 60 minutes, which even showed to have a potentially positive effect for wellbeing, even in comparison to a control group. This indicates that while total abstinence might work, it remains to be a viable and perhaps easier intervention to focus on limiting use, not removing it (Lambert et. al., 2022; Hunt et. al. 2023).

### **3.2.2 Cognitive and Learning Themes**

While it can be hard to assess and differentiate between certain articles' primary themes, there are a couple of articles that display a heavier purely cognitive focus, in comparison to the section of psychological articles, that fall more inside the broader psychological realm, with aspects of cognitive inquiries also present.

Two specific articles, by respectively Jiang & Ma (2024) on a possible effect on analytic thinking from TikTok use and the other from Yang et. al. (2024) focusing on a possible effect on the individuals' sense of time, also called Time Distortion, are however very focused on very specific cognitive concepts in their articles. This made it possible for the article on analytic thinking to seemingly display how TikTok use prior to a lab test showed a reduce in the level of analytic thinking, argued potentially to be the result of TikTok use leading to fast, impulsive and assumptive lines of thought (Jiang & Ma, 2024). In the case of Yang et. al. (2024) their experiment showed an increased time distortion effect of users who were on TikTok before their test, compared to the users who read a book before. Despite there being countless articles including cognitive aspects the results given by these two studies are quite unique in their very specific focus, which in turn has led to results that strongly supports a negative effect of using TikTok in a very clear way. If replicated



successfully by other researchers it might give credence to performing more specific research which when combined might give a more cohesive picture of TikTok's effects, despite survey studies also being useful for the overall research in a more generalized manner.

The subject of learning, both social learning and a more general kind is also present in the articles and is also interwoven with human cognition in its interactions with TikTok. These articles have quite different intentions overall. In an article by Sun et. al. (2024), it is the view of the authors that Chinese college students adopt both internal issues and external problematic behavior from using algorithmic-based platforms. While internal issues were mental states such as depression, anxiety and sleeping problems, the external issues were expressed through seemingly increased impulsivity, attention deficit and hyperactivity (Sun et. al., 2024). Brady et. al. (2023) also found occurrences of social learning, which could lead to adoption of misinformed views and misconceptions that both potentially was propagated by the forming of in-groups on TikTok, the algorithms' recommendations, but also specific content creators, given that their follower count and status might make them seem more trustworthy and thus acted as role models for their viewers.

On a more positive note, McCashin & Murphy (2023), saw a potential for public health and mental health being spread on TikTok, if done by proper channels, such as practitioners, official institutions or non-profit ones, since the content on these subjects from individual content creators vary greatly in their quality, sometimes being anecdotal and worse possibly serving as harmful misinformation. Not unlike this, Wang et. al. (2023), identifies a potential use from their study on TikToks potential for mediating anxiety, providing a virtual form of reward for the individual. They believe the ease of use and the platform's fun and interactive nature might show potential for a learning context as well (Wang. et. al., 2023).

The last article on learning provides a more nuanced view, in its exploration of how potentially disruptive learning can occur in a non-formal way and incidental way in a Danish Youth Club (Larsen, 2023). In the article, it is detailed how trends and content displayed on TikTok might prompt responses from the Club's teachers, where the open and relatively unfiltered array of content might lead to children interacting with or dancing to suggestive or inappropriate trends, which might not be

understood in the same way for a child. Thus, the adults in the Youth Club might intervene or explain the trends from a grownup's point of view, potentially resulting in children being inducted into developmental disruptive understandings they would not be introduced to otherwise (Larsen, 2023).

This research makes it clear that a potential might exist for conducting beneficial and positive learning methods, when meeting youth on an app they are familiar with, yet informed by the risks and challenges that also reside in its vast amount of content, not always lending itself to provide a more controlled environment for proper teaching.

### **3.2.3 Motivations for use**

Considering the vastness of articles displayed in the prior article, which is an overwhelmingly negative one with regards to the findings of TikTok use outcomes that they overall combined put forth. The question in response to the laid-out research could be what users gain from this use, or with or without a perceived gain what their reasons are for their continued use of the social media platform TikTok. The inquiry has also been a field that has been explored by the present research, in the attempt to primarily investigate the youth's usage. To explain what TikTok provides as a platform, the motivation of use has often been explained through the involvement of gratification theory, which looks at specific cases of use and what needs are central in the user's perceived gratification of their needs.

In one such article by Scherr & Wang (2021), the intent of the study was to uncover use of TikTok both in general, but also in relation to the specific time of day the app was used. Not surprisingly, the most seen motivation was the factor of novelty, simply displaying the need to do something that alleviates boredom, while also being fun and enjoyable for the user. Interestingly, this was especially seen in the nighttime, where trendiness was shown to be a higher motivation during daytime use. The use of TikTok as a tool for escapism was especially present in the female part of the sample, while users posting videos themselves was seen as a general way of gratifying self-presentation needs (Scherr & Wang, 2021). This study was unique in the way of analyzing usage patterns through the time of day, potentially providing

relevant knowledge of how use and motivations of use can differ throughout the day and thus have different risks or affordances within different times during the day (Scherr & Wang, 2021).

However, what is not unique, are the indications the study provides for the motivations behind the use of TikTok. Both the articles of Vaterlaus & Winther (2021) and Gu, Gao & Li (2022) also see novelty being a factor for using TikTok, while trendiness and escapism also seems highly present in the latter study. In the first study, it has also been a focus to interview non-users and past users of the platform, giving an insight into what might deter someone from sticking to the app or even simply starting use of it. While users displayed an interest in a wide range of affordances, such as its potential for relational gains and engagement in communities well established in the app, it was clear that for some of the non-users, the app was seen as an immature platform, full of content deemed self-serving, perceiving it as “cringe” or having doubts of the privacy and security measures implemented by the app (Vaterlaus & Winther, 2021). Seemingly similar intents were seen in another study by Dong & Xie (2024), with both novelty, relational aspects and other factors such as escapism and stress reduction were deemed the most commonly displayed motivations for use, while they in the exploration of posting motivations discovered the perceived importance of sharing one's thoughts and attempting to gain fame.

In the case of general social media use, also including TikTok, a Turkish study by Elkatmis found high use of social media for sharing information about potential homework or projects, but also less school centered uses such as communication between friends. Given that around 44% of the respondents from the sampled Turkish school systems fourth grade described not being on social media yet, it might possibly indicate a difference between different cultures on the age of becoming involved with social media, although it is important to note that the average age of adoption still is around the age of 13, which admittedly is as early as the official rules of many social media platforms declare (2024).

Not unlike the prior study by Scherr & Wang (2021), the study of Manago et. al. (2023) delves into the significance of gender on user motivations, finding greater use of gaming and thus competitive related social media platforms such as Discord for boys, while TikTok more often was used by girls and at a higher rate with the

intention for seeking validation on factors of appearance, social life and emotions. As such, motivations may differ greatly within the use of TikTok in relation to concepts and cultures surrounding gender ideologies.

While these summarized studies were conducted through the use of surveys, Tam & Inzlicht (2024) used a more experimental approach, centered on short videos on TikTok and YouTube being used to avoid feeling boredom, not unlike the previous findings of novelty use being a factor, although their study also had the intent of displaying how this might not work in the intended way, as there was a clear tendency of fast scrolling, both within and between videos, in an attempt to stimulate oneself and getting rid of the feeling of boredom. The study however, clearly indicated that this sort of use only stifled the feeling of being truly immersed in the content being watched, and inadvertently causing more, not less, boredom (Tam & Inzlicht, 2024).

Lastly, a study by Chapman & Abraham (2024) wanted to explore the interaction between use and the algorithmic system used by both TikTok and other forms of media like Netflix. Conducting a survey, they found that use was intensified when content was perceived as useful, while the algorithms' importance was shown in the visible preference for content, which was displayed based on personal recommendation systems, based on the user's prior consumption of media. In this way, such algorithms were also deemed to have a role in both the amount of watch time on different kinds of content, but also indirectly affecting the emotions of the individuals relying on such curation (Chapman & Abraham, 2024).

### **3.2.4 The Monetary Aspects of Engaging Users**

It should not come as a surprise that social media in general have wider and larger goals for economic gain today, as the popularity of their use has been rising steadily since its first inception, which could be MySpace back in 2004. That platform's adoption is massively dwarfed when it is compared to TikTok's fast growing userbase, that on average, from its launch grew by 20 million users per month from 2016 to about a half year into 2018 (OurWorldInData, 2019). A further catalysator for its userbase development happened in covid-19's isolation period, where the need

for self-stimulation and the feeling of being involved in human connection was limited to few physical encounters and using online services, such as social media. A statistical survey found that there was an average of 1-2 hours added for 29.7% of users during the social distancing period, in a sample of 609 participants from the US (Statista, 2020). With the combined monetary gains from TikTok's own official advertisement system, individual content creator advertisements and product partnerships, as well as TikTok's unique way to influence music trends through its embedded musical tracks, which is licensed from large record labels such as Universal Music Group (UMG). This deal was, however, in the case of UMG, abandoned due to complaints of low compensation for the company itself. Conversely, multiple artists have seen benefits from the formation of trends revolving around their music tracks, potentially introducing their music for new possible fans (The Conversation, 2024).

In general, a massive potential exists for TikTok on monetary gains with its large number of users scrolling through content, where human cognition and attentiveness to the app is seen as a factor for optimizing this gain for higher profit. As seen in multiple of the included articles, there is a clear interest from institutes involved with the subjects of business and marketing to investigate this potential, to contribute to the existing knowledge of how this process can be optimized in a context of earning more (Yang et. al. 2022; Huang et. al., 2023; Yang et. al., 2021). This produces a potentially problematic outlook, when this research is viewed from the point-of-view of psychological researchers involved in studies exploring the mental and cognitive outcomes of TikTok use, which was described earlier in the first subsection.

What seems to be clear from the general dissection of the included articles within the context of business and marketing, is that the primary factor for enhancing the economic gains of a platform, is to optimize the platforms in a way that leads to more use (Yang et. al. 2022; Huang et. al., 2023; Yang et. al., 2021). In this way, it becomes a battle between the platforms, to be the best at capturing users' attention, not only from a perspective of content quality, but through the mechanical aspects such as maximizing the systems potential for inducing flow-states, through features such as personal and individually recommended content enabled by clever use of algorithms and endless scrolling (Yang et. al. 2022; Huang et. al., 2023; Yang et. al., 2021). From the articles of Yang et. al. (2021) and Yang et. al. (2022), an emphasis

is put upon the social attachment, which might form from using an app or platform that in the context of marketing seemingly leads to a higher use. The possibilities for self-expression here seem beneficial for the user and may lead to higher levels of app usage. Meanwhile, the article of Huang et. al. (2023) identifies a potential shortcoming for sustained use, if the app/platform leads to information overload, since it might lead to fatigue and potential discontinued use of the app, prompting the study to recommend focusing on avoiding displaying content that might lead to fatigue, to increase use.

A deeper discussion of this will be conducted in the discussion section, where it's more appropriate to unfold whether or not this sort of research is optimal to conduct in an institutional vacuum.

When referencing these three studies, it should also be noted that research exists within the same marketing realm, which turns the focus to potential downsides of marketing used on platforms that involve a large portion of kids in the userbase. This is the case of De Veirman et. al. (2019) and their study on influencers presence on apps such as TikTok. In their study, they offer detailed concerns of the impact influencers can have on kids, when their marketing and advertisements for products may serve as a particularly effective way of exploiting kids susceptibility to these types of promotions that typically base themselves on recognition and a social bond with the influencers involved, especially if the child is already a follower of the content creator (De Veirman et. al., 2019). As such, it can be summarized that the marketing research both has a perspective on themes of harnessing monetary gains but also involves itself with potential ethical issues with the practices used inside the marketing world.

Still, it should be said that several of the studies simply conduct the research that their institute's frame of reference enables and provides the theory for. Within this context, the negative aspects focused on in the articles differ in a stark way from the earlier psychological sections focused on aspects such as effects on wellbeing and mental symptomatology. As these articles see issues with lower use and provide recommendations for the platforms to increase use, instead of the usual psychological perspective on providing knowledge to effectively map potential effects, positive and negative, with the often-inherent underlying intention of

providing possible interventions to lower or cease usage of the app, clearly in stark contrast to the other studies.

As seen in the matrix, these studies, primarily originate from China, which might be a factor for it standing out in comparison to the other studies, which often focus on the detriments instead of positives. Concludingly, it should be said that this does not mean that there is a general bias in the country conducting the studies. These studies are surrounded by several other Chinese studies in the matrix, that provide similar critical views and worries of effects on mental health, in the exact same way that many of the other studies conducted do, which was also presented in the earlier presentation within the subsection concerning the studies with psychological and cognitive themes, which mostly consists of a negative and stark outlook on the possible side-effects of using TikTok, primarily in the case of problematic use, which can be seen as a parallel term to addiction, but within a social media use context.

With the narrative synthesis now reaching its end, it is now relevant to discuss these articles that were included in the Scoping Review, to provide further perspectives and provide the means to summarize what can be said about the conducted Scoping Review, what its findings entail and how the mapping out of the included studies could potentially draw a recommendation for further studies, through identifying research gaps or lacking presence of certain methodological approaches.

## **4. Discussion**

As seen in the Narrative Synthesis, the vastness in the number of included studies (46) resulted in offering a deeper insight into findings of countless subjects including, but not limited to themes of Problematic Use/Addiction, Well-being, Mental Illness, Self-Concept, Identity, Resilience, Body Image, Learning, Social Learning, while also offering an insight into Motivations for use (Matrix, p. 66). Yet, it is also displayed how TikTok also is a trending topic to explore for researchers of Marketing and Economics, which differs greatly in intent compared to the other studies, as they focus on understanding how to gain higher use and harness its potential for gaining profit.

In accordance with the PRISMA Guidelines for Scoping Reviews, the discussion will be composed of a summarization of the results seen in the included articles, how it relates to the research questions established by the research study and discussions of how its findings can serve as an important step for potential future research. Potential limitations will also be discussed.

Looking at the study's results, the research on TikTok and its psychological effects are in the interest of a wide array of countries, alluding to the presence and resulting influence it has established at a global level. When looking at studies showing that there is a potential for mental illness contagion on a platform such as TikTok, where its algorithm will bring you more of this content, as it correlates engagement with interest, it might end up being relevant for countries to look into possible interventions to avoid even more strain on mental health systems than already present. Conversely even if an individual user finds out that they have a mental illness from social media content, it's not entirely a guarantee they would seek help, risking them being alone with it, instead of being diagnosed by primary or secondary care systems that also have the capacity to move from diagnosis to possible treatment (Harrison et al, 2018, pp. 676-690, 778-785). This is especially relevant if it's a disorder that might be treated by medicine, which requires a formal diagnostic process (Harrison et. al., 2018, pp. 632-639).

The research methods of the studies have been varied, with included articles being conducted using qualitative interviews, surveys, lab studies, systematic reviews. Surveys were quite possible due to their ease of use, the most present studies, with studies also including interviews (Matrix). While some reviews were done, only the study by Conte et. al. (2024) was directly involved with systematically reviewing studies concerned with the concrete subject of TikTok's potential effects on its user's mental health. It should be noted that this might be a result of only accepting peer-reviewed studies, which also, as mentioned earlier per the reference to Forsberg et. al., it is possible research from relevant countries such as China has been less involved due to differences in peer-review rates (2022). Since there is a potential for incongruent views between different countries due to geopolitics, it is possible that China's seemingly lower tendency of conducting peer-reviews, has affected the data collection process and in turn the presented articles.



When turning the attention to other potential biases, on the matter of the comparative differences between the genders on the potential for psychological and cognitive effects from using TikTok, it should also be noted that, as seen in the collective matrix table, a lot of studies have a skewed gender ratio, which might be due to a practice of research being done on university students, where the skewed gender ratio of some university courses might play a role. This complicates the generalization of the data, as does the overall comparative significance, when studies intended to research TikTok users in general, rely so heavily on university students and often even primarily the institute's own students, leading to psychology students being presented as representative for an otherwise highly diverse population of TikTok users, risking generalization bias (Peters, Krauss & Braganza, 2022). This point is further driven home, as one of the included studies, by Allahverdi (2022), indicates a potential difference between genders, but also between the institutes the different students are recruited from, although not displayed within TikTok in the study.

This difference was seen in the case of other platforms, which also brings forward the potential shortcoming that comes with focusing on exploring the TikTok related data of the studies in general. While it was a clear intention by the study to focus on TikTok's uniqueness and platform-specific potential for causing certain effects, by its unique algorithmic and short video design it might be less unique now due to its popularity. The success of this formula has led to similar design elsewhere as is present in the case of Instagram Reels and YouTube Shorts, where the absence of including these similar snappy and short-form content platforms might exclude otherwise relevant studies. Furthermore, due to the potential for bias based on geopolitics, it might have offered a deeper potential for discussion, if it was included whether Instagram and YouTube might not differ that much from TikTok, for example on their potential harm to the mental health of its users. This also brings into question, whether including these platforms might perhaps show similar reasons to be concerned of data collection and user privacy, albeit in American, and not Chinese hands, as the concept of establishing some form of data sovereignty might be increasing as seemingly innocent and fun social media platforms are brought forth as examples of strategies to establish and maintain cultural influence on a global level (Su & Tang, 2023, pp. 57-67). This potential can also be seen through the

possibility for misinformation and propaganda conducted through such platforms, where Lim & Guerra beyond describing this potential, also cite a study by Matsa (2024) from the Pew Research Center, indicating that an increasing degree of adults in the US get their news from TikTok. This also puts a lot of responsibility on these platforms to fact-check and provide sources, as they end up becoming a place for information in a way that usually is reserved for traditional news media outlets, with the journalistic staff needed to serve as a reliable news outlet (Lim & Guerra, 2024, pp. 85-97; Matsa, 2024).

While the data policies might not differ as much as one would think between platforms such as TikTok and Facebook (Su & Tang, 2023, p. 66). This level of influence, provided by having a global platform, might also be important for other reasons. As has been described in the narrative synthesis on the monetary gains of TikTok, there is a clear potential for earning money through both marketing and sales being facilitated through these kinds of social platforms. It was here shown and alluded to, through the inclusion of articles stemming from researchers involved in economic aspects of TikTok, that their research might be perceived as problematic, in comparison to the rest of the psychological research, as it asks the question of how to reach higher use with regards to TikTok users, in stark contrast to the usual perspective of wanting to reduce it. Even if it is based on having a focus on the prospects of business, there should be a broader perspective on doing this while also having an ethical framework to adhere to, as it within the summarized articles and their research on potential for various detrimental effects, but also some positive outcomes, end up pushing for more of what might actually be the problem, higher use. In a way, it becomes a monetization strategy based on how much attention can be derived from the individual human's mind, as creating a relation between user engagement in hours x money earned through advertisement becomes a perspective void of the consideration of how this increased use might affect the individual user and their mental health.

Concludingly, the study has gained the insight it sought, as described in the research questions RQ1-RQ4, with regards to how the research has been conducted, which countries, authors and journals have been involved in the studies, what keywords and lastly which psychological and cognitive themes were present in the included

articles.

Recommendations for further research could be based on conducting a systematic review with the addition of performing critical appraisals of the studies, to avoid basing conclusions on lacking or biased research. Furthermore, it should also be noted that both gender spreads, age and socio-economic aspects might be affected by a reliance on student samples, perhaps missing out on valuable data giving a broader and better understanding of what use of TikTok can lead to in a wider demographic understanding. This might be the case with the seemingly lower number of studies centered around the use of TikTok within both middle aged and elderly populations. Perhaps forgoing valuable information on how a group, such as the elderly, with different age-related factors than the developing youth, might also be affected by using TikTok, not helped by the already aging brain, already at risk of cognitive decline (Harrison et. al., 2018, pp. 540-545). With this it can be said that the study's intentions and goals have been met, as it was intended to map out existing research and thus find potential holes in knowledge within the field. A Scoping Review has been conducted, guided by the PRISMA Guidelines, and on the subject of the possible effects stemming from TikTok use, it seems the findings of the study make it relevant to continue research of the potential risks of the app such as causing problematic use through addiction and a spread of other negative mental outcomes, which in general seem to be a product of algorithmic and other design choices made, like causing immersion through establishing flow-states, recommending relevant and personalized content for the user. There also seems to be a more indirect effect happening in relation to the content being put out by its content creators, showing that some potentially negative outcomes are not caused by the app or its design itself, but also through the activity of its independent and self-expressive users. Even if the primary concern behind the possible incoming ban, was based mainly on the criticisms of TikTok's potentially problematic relations with the Chinese government and how it might pose as a risk for the data of the individual users, discussions of potential mitigations and interventions might end up being replaced by a more ultimate measure, in the form of a straight up ban, should TikTok lose their legal battle with US. Should this happen, the adoption of TikTok's features by Instagram Reels and YouTube Shorts might warrant focusing the research on short-form video content to those platforms (BBC, 2024). The emphasis on short-videos seems to be a working formula, as a study by Rajendran, Creusy & Garnes measured

a significant drop in the popularity of long-form videos since YouTube introduced Shorts, with a staggering number of 2 billion monthly users of YouTube Shorts (2024).

## **5. Conclusion**

The conducted Scoping Review finds both possibilities and risks in the use of TikTok, as positive effects such as stress reduction, social connection and enjoyment can be found on the app, while an abundance of negative mental outcomes also are recorded in the included articles.

It must also be concluded that further studies are needed with regards to groups that are not usually included in much of the research done on a social media platform such as TikTok, due to a potential misunderstanding that the earlier mentioned negative effects following TikTok use are limited to youth, young adults and minorities. The lack of research on groups such as older adults and elders, is quite often present in studies, due to the reality that much research conveniently uses what is available in the university institution, young students. The need to expand on these gaps is also pointed out by Harriger, Thompson & Tiggemann in an article discussing future directions for social media research, who urge for a less simplistic method than used today, which they propose might be the result of referencing theories stemming from older traditional forms of media (2023).

Beyond the former summarizations, it is important to factor in, that beyond the research done by external researchers having a certain amount of scientific uncertainty, TikTok's own accidental admissions and insight into previously disputed points of criticism warrants further discussions on the usage of social media and responsibility of the companies behind them to act on building digital environments with ethics in mind. Despite what research might conclude through the different studies.

As past and present research has shown, establishing concrete correlations between social media use and negative outcomes remains hard to do, if not impossible, perhaps warranting the APA's recommendation for possible regulations on social media platforms, simply because it is deemed possible to enact features that make it

safer for youth and adolescents (APA, 2023; APA, 2024).

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