

“We should be talking about this more”: an empirical examination of stress-related content on TikTok

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ABSTRACT

Recent research has revealed that popular social media platforms are emerging as crucial digital health sources for individuals across demographics, but more so for adolescents and young adults (Lupton, 2021; McCashin & Murphy, 2022; Montag et al., 2021). TikTok is the latest social networking tool said to be functioning as a source of informal mental health communication and is increasingly being utilized for giving and seeking advice, sharing information and personal stories about the symptoms, effects, challenges, and coping strategies related to stress and anxiety, among other mental health issues (McCashin & Murphy, 2022). Despite the rapid growth of TikTok-based research, investigations of mental health-relevant content on this platform are still very few. The current study aims to contribute to this body of research through a content analysis of the most popular TikTok videos labelled with pertinent hashtags, namely #anxiety, #stress, and #stressrelief. The aim is to map the practices through which TikTok content creators appropriate the platform’s affordances in order to create content and generate interactions around a focal object of common concern. The analysis focuses on diverse aspects of the platform’s use as a medium for creating stress- and anxiety-related content, including the content creator identity and presentation, video format, type and purpose, audience engagement levels, as well as reported sources, symptoms, consequences, and coping techniques of stress and anxiety. The examination of TikTok user practices offers insights into the evolving patterns of consumption and production of digital content, and cultural production in a social media context.

Keywords: stress, anxiety, mental health content, TikTok, social media

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1 INTRODUCTION

Stress has often been described as the health epidemic of the 21st century, being nowadays one of the leading causes of illness, mortality, and the compromise of human and economic development. Recent studies from Europe, the USA, and other parts of the world, have documented both the high prevalence of stress and anxiety, as well the growing trend of individuals seeking for advice and stress coping methods, through either professional or informal channels (Drillinger, 2021; Racine et al, 2021; STOA, 2022). Globally, mental health disorders - many of which relate to chronic stress - are on the rise, signalling an unprecedented “global mental health crisis” (Rudd & Beidas, 2020) and an ever-growing concern for national governments and international organizations (WHO, 2022a). At the same time, the stressors linked with disruptive global events such the COVID19 pandemic (Covid-19 Mental Disorders Collaborators 2021; Vindegaard and Benros, 2020; WHO 2022b) and more recently the Russian War in Ukraine (Bai et al, 2022; Jawaid et al, 2022) have only exacerbated the situation, especially for at-risk or more vulnerable groups, such as adolescents, the young and women.

Before the pandemic, roughly 16 percent of the population in the European Union faced mental health issues, but that number has already doubled and is constantly climbing (STOA, 2022). According to the latest statistics by the World Health Organization (June 8, 2022), one in every eight people in the world lives with a mental disorder, with anxiety and depressive disorders being the most common (WHO, 2022a). Statistics, data, and reports also show that young adults (belonging to the so-called Gen Z and Y) are the demographic cohort that has been mostly affected by the rise of stress, and this as a result of various causes that range from worries about their future, financial uncertainty, college life, lifestyle choices, as well as the use of social media and technology as such (Mojtabai et al., 2016; Stefaniak et al., 2022). Already in 2018, 91 percent of US Gen Zs between ages 18 and 21 reported to have experienced at least one physical or emotional symptom due to stress in the past month, with Gen Z’s average reported stress level being higher than the overall average (American Psychological Association, 2018). By fall 2021, the prevalence of depression and anxiety in children and adolescents around the world had doubled from pre-pandemic levels to 25.2 and 20.5 percent, respectively. Symptoms were noted at higher levels later in the pandemic (Racine et al., 2021). Anxiety and depression continue to be the most common mental health conditions, with one in three adolescents meeting the criteria for anxiety by age 18 (Drillinger, 2021). In the UK, young adults say ‘I’m fine’ 14 times a week, but only mean it 19 percent of the time (Comic Relief, 2022). The OECD figures are also worrying, with 67 percent of Europeans saying they do not receive the psychological support they need and have difficulty in their daily lives (OECD, Mental Health).

With the well-evidenced rise of chronic-led stress and anxiety, it is timely to examine mental health-relevant content on emerging social media platforms.

TikTok's rapid ascent in the social media landscape and its distinctive affordances and cultures, have made it an important topic and site of inquiry³. Our study contributes to this line of research by exploring stress- and anxiety-related content on TikTok. In a broader perspective, the study aims to contribute to a greater understanding of the transformation of society through the deployment of emerging technologies and the evolving patterns of consumption and production of digital content.

2 BACKGROUND

The Internet has changed the way people access health-related information and how they search for support and interaction with peers in similar situations. Studies of stress- and mental health-related content on Twitter (Doan et al., 2017; Kolliakou et al., 2020; McClellan et al., 2017), Instagram (Arendt, 2019; Bogolyubova et al., 2018; Budenz et al., 2020; Giordano et al., 2022), Tumblr (Choudhury, 2015; Griffith & Stein, 2021; Seko & Lewis, 2018), Facebook (Zhang, 2017; Rothschild & Aharony, 2021), and YouTube (Devendorf et al, 2020; Ziavras & Diamantaki, 2022) confirm that the popular social networking platforms are increasingly being used for informal mental health information and support seeking and communication by afflicted individuals, experts, professionals, and amateurs alike.

There is ample evidence that individuals use social media networks to seek and share information that is vital to their condition and thus improve their overall well-being (Caron, 2022; Chen & Wang, 2021; Clark et al., 2018). Studies have shown that social media and online health support groups can provide people with useful and actionable information, emotional and esteem support, as well as a sense of empowerment and a sense of community, which can be very beneficial to their psychological health (Giustini et al., 2018; Ilioudi et al., 2012; Sharma & Khadka, 2019). Young adults report that they are more comfortable discussing their emotions with strangers on social media and online forums than with their friends directly (Hanley et al., 2019). According to a global and cross-generational study conducted by UK market research firm YouGov on behalf of TikTok (YouGov, 2022), approximately 75% of people around the world across generations, feel increasingly comfortable discussing their mental health, despite the fact that there are still barriers that hold people back from opening up.

TikTok has been an exponentially growing social media platform (Briskman, 2022) that has become increasingly popular for mental health discussions and content related to psychological disorders (Basch et al. 2022; Caron, 2022; Comp et al., 2020; Dean, 2022; Drillinger, 2022; Herrick et al, 2021; Tavassoli, 2022). Many users turn to TikTok not only to share their own struggles and experiences, gain fame, but also to connect with others and offer education, support and validation (Amato, 2022; Drillinger, 2022). Whether through memes, videos, or simple text posts, its mostly young users - the increasingly called "TikTok generation" (Zurawik, 2022) - are using the platform

³As of November 2022, 403 scholarly publications analysing TikTok are in the Scopus database (in the article's title and abstract), of which 215 were published in 2022. TikTok media scholarship focuses on understanding the platforms technological architectures, its user practices and the types of content circulating on the platform, as well as its socio-political and cultural significance.

to express their personal experiences, raise awareness about mental health, provide resources and education, and build community.

A systematic review and content analysis of literature within the period 2016 to 2021 concluded that TikTok presents a novel and creative opportunity for youth mental health practitioners to connect with younger audiences and achieve positive mental and public health outcomes (McCashin & Murphy, 2022). Moreover, as seen with many online movements like #MeToo and #BlackLivesMatter, TikTok has become an important outlet for sharing personal stories of grief and resilience in a public setting where they may be most effective (Caron, 2022; Manago et al., 2021), and “furthermore without the need for planning, scheduling, and financial remuneration” (Basch et al, 2022: 4)

TikTok itself has prioritized mental health-related content in collaboration with its global community and partners. In October 2022, the company launched a suite of tools and resources on mental health support and well-being, as well as an in-app campaign named "Mental Well-Being Comes First", intended to raise awareness on the importance of mental health and spark more public discussions, while simultaneously working to de-stigmatize mental well-being discussions (Hutchinson, 2022). As TikTok itself states on its online newsroom:

“With over 45 billion views of #MentalHealth, 10 billion views of #MentalHealthAwareness and 1 billion views of #Wellbeing on our platform, we aim to continue bringing awareness around the value of mental wellness, as we nurture a community that feels empowered to connect and share perspectives on mental well-being” (TikTok, Oct. 10, 2022).

At the same time, concerns have been raised about the potentially adverse effects of actual TikTok use on users’ mental health and mental health awareness, as the benefits of TikTok coexist with the dangers of misdiagnosis based on content seen on the app, predatory advertising, inaccurate information, misinformation, or even the exacerbation of symptoms (Amato, 2022; Caron, 2022). Compared to Instagram, TikTok is likely to be even “more dangerous” because of its rampant use by the young demographics of its users. Despite the lack of conclusive evidence to date (Wilson & McDarby, 2023), experts, legislators, digital rights organizations, schools, and researchers have scrutinized the short-form video app's potential impact on its youngest users, voiced concerns, and even filed lawsuits against TikTok for spreading misleading and age-inappropriate content (Cohen, 2023), and for aggravating the mental health crisis among young people (Yurkevich, 2023). Since it “provides an endless stream of emotional nudges, which can be hard to recognize and really impact users in the long run” (Paul, 2022), the app’s effects may be latent and invisible, flying under our radar for a long time and not always easy to identify. Furthermore, the app's hyper-efficient and “sticky” personalization algorithm, which keeps users engaged longer, combined with the platform’s increasingly intimate and personal nature, can lead to normalization and oversharing of personal trauma (what a user aptly calls "trauma dumping on TikTok") (Paul, 2022). Experts also worry that because of its sophisticated algorithm, TikTok is more prone than traditional platforms to creating “filter bubbles” and thus, shrinking the diversity of the content users consume (Zha, 2020). It can also let extreme content go through the platform’s cracks. A Wall Street Journal investigation

in 2021 found that teens were inundated with dangerous weight-loss videos, including “tips” on how to consume less than 300 calories per day (Hobbs et al, 2021).⁴

Overall, it seems clear that TikTok is playing a critical role in the conversation around mental health today, both by addressing important issues directly through content created by its users and by providing space for these issues to enter mainstream discourse (Basch et al., 2022; Herrick et al., 2021). While TikTok-based research has been expanding rapidly over the past few years, studies of mental health-related content on the platform are still few (Gallagher, 2021; Messina, 2021; Miodus & Jimenez, 2021; Yeung & Abi-Jaoude, 2022). Despite TikTok’s overall popularity as a medium for sharing stress-related content, hashtags related to stress and anxiety have not yet been the focus of any systematic study. The present study adds to this scholarship by offering insights into the under-researched area of digital mental health content on the popular short-form video app. It attempts to map the practices through which TikTok content creators appropriate the platform’s affordances to create content and generate interactions around a focal object of common concern.

3 METHODOLOGY

For this study, we conducted a cross-sectional content analysis of the most popular stress-and anxiety-related TikTok microvideos posted between June 2020 and June 2022 under the hashtagged topics of #stress, #anxiety, #stressrelief. Content analysis - a social science methodology concerned broadly with the objective and systematic description of the content of communication - has previously been applied to investigate health-related information seeking and sharing in emerging media, including COVID-19 (Basch et al., 2021; Li et al., 2021), sexual health (Boatman et al., 2022; Fowler et al., 2021), and mental health (Fulcher et al., 2020; Lewis et al., 2012).

The examined hashtags were selected based on the recommendation of the platform’s search engine. The top results when entering the keywords “stress” and “anxiety” through the search option, were the following:

#anxiety: 15,7 million views

#stress: 4,78 million views

#stressrelief: 1,88 million views

The content analysis has been carried out following the five steps of the research design process, as described by Krippendorff (1980), namely sample selection based on research topic, codebook development with relevant coding categories, data collection, coding, and interpretation. The research sample was chosen purposively and consisted of the top 50 videos for each of the hashtags above, as ranked by the platform itself. In choosing to examine the top videos as served by the platform’s algorithm, the aim was to see what an average user would be exposed to, when searching for content related to each of the 3 hashtags. All 150 videos were extracted on a specific date (June

⁴ It is worth noting here that TikTok is currently encountering increasing regulatory challenges in Europe, where the Chinese-owned app has largely managed to avoid the level of scrutiny experienced in the United States (Cheng & Browne, 2023). At an event on mental health in December 2022, French President Emmanuel Macron called TikTok "the most disruptive" social media outlet for young people, warning that it was "deceptively innocent" and addictive (Lyons, 2023).

12th, 2022), so that the video performance results would be comparable and to reduce skewing of the results.

In contrast to other social media apps that are centered around individual subscribers, TikTok has a global user base that is connected through a distinctive algorithm. The algorithm of TikTok serves content based on the user's past behaviour, for example, likes, follows, or comments. It generates a personalized For You page for each TikTok user, based on their individual preferences and engagement on the platform. This page is constantly adapted to reflect the user's activity on TikTok, including the videos they have liked, commented on, or shared, and the hashtags they have used. Researching a specific type of content should take into consideration that the content provided will be thus influenced. To overcome this and in order to be able to collect a sample that would not be pre-selected by the platform based on past behaviour but that would reflect a common user's experience exploring the hashtags, we created a new TikTok account, using an unused Gmail address, and accessed the platform through Brave, a privacy-focused browser with a built-in ad, cross-site tracker, and cookies blocker⁵. The browser was installed on a computer on a secure online network. No other sites were accessed through it while the sample was collected.

All 150 videos were coded manually and iteratively by the three researchers. This followed a coding validation test early in the coding process, in which all three researchers coded independently the same five videos. Coders discussed latent meanings of analyzed texts using shared interpretations and by developing a shared understanding of the communication content. Peer debriefing was used for cases of coding disagreement, during which both researchers discussed the situation and settled on a single code. The results were compared to ensure the validity of the coding process. Through this process, initial codes were further refined (e.g. groupings of like-codes, reviewing coding categories, defining and naming them), until the final categories inclusive of necessary codes were agreed upon.

The study's code scheme was designed to reveal the common patterns of stress- and anxiety-related content on the platform. More specifically, the study addressed several aspects of the use of TikTok as a medium for sharing stress- and anxiety-related content, such as the identity and online self-presentation of content creators; the purpose, type, and format of each posted video; the levels of audience engagement with different types of content; as well as the sources, symptoms, outcomes, and coping strategies related to stress and anxiety. The codes themselves were produced deductively, based on existing literature regarding video performance metrics indicating how to measure the engagement of each shared video (Trunfio & Rossi, 2021), using existing content analysis studies of TikTok content (Li et al., 2021; Vázquez-Herrero et al., 2020) and in specific TikTok content related to health communication (Carter et al, 2021; Zhu et al., 2019), as well as inductively, following the viewing of a number of videos from the sample.

⁵ For more information, visit <https://brave.com/>

The codes were allocated in the following categories:

- **General information about the creator** (profile, demographic, country, channel content type, verification, etc), and whether the creator is a professional or non-professional/average user.
- **General information about the videos** (e.g. source, title, authorship, date of upload, duration of video, description text), information about the video's content (e.g. setting, theme, stress-related narrative, purpose, tone of voice, call to action, etc), and the video's editing features (use of TikTok filters, stitching, duets, etc), audio features (voice over, song, repurposed sound, etc.), and captions' features (use of title cards, captions, supers, text effects, etc).
- **Engagement metrics** regarding creator's channel and posted videos (number of followers, video views, content liking, sharing and commenting), depending on the metrics currently enabled by the TikTok platform.
- **Information about stress**, for which video content was examined in terms of the themes of stress and anxiety, by coding both the content features of the message itself (stress/anxiety sources, symptoms, and solutions) and how it addresses the audience (e.g., calls-to-action, implied targeted audience, temporality).

The coding/conceptual scheme, which depicts all used coding categories is pictured below (Figure 1)

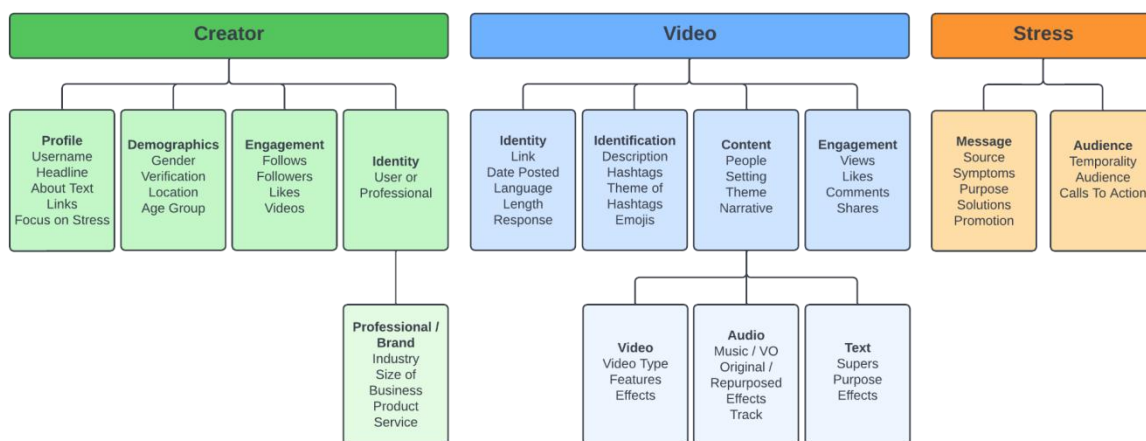


Figure 1: Coding scheme

In coding and analyzing the data, we applied the combined content-analysis (CCA) model (Hamad et al, 2016), integrating quantifying (e.g. frequency analysis and statistical representation) and qualifying (e.g. interpretive analysis of the manifest and connoted of the texts), using both deductive and inductive coding categories, and basing our analysis on an understanding of the context to produce a more nuanced account of data that is “jointly data- and concept-driven” (Snelson, 2016).

The coding was done manually through Google Forms, on a questionnaire used by both coders. The coding results were recorded, organized, and analysed statistically in Microsoft Excel. The approach used throughout this study was informed by the Internet Research: Ethical Guidelines 3.0 from the AoIR Ethics Working Committee (Version 2.0) (Franzke et al., 2020). Accordingly, the research data will be stored for three years, from the data collection date.

4 LIMITATIONS

The limitations of this research should not be ignored.

The search capabilities of the TikTok platform are restricted in that users may only search for phrases approved by TikTok's Community Guidelines. As a result, researchers doing content analysis on TikTok are restricted to the most popular hashtags they can discover and may overlook other important hashtags used by populations of interest.

Videos that were not tagged with at least one of the three selected hashtags were not examined, despite the fact that they may include content related to stress, anxiety, and stress management. Also, the three tags may have been applied on any type of video content, including content that is irrelevant to mental health. Such content was not included in the list of coded videos.

Although TikTok's personalization and recommendation algorithms were likely less active given that we used a fresh passive profile, it also implies that a typical user may engage with diverse content.

We limited our research only to the site of production (content creation). Further research could focus on the site of consumption (examining users' comments and feedback to posted videos).

Although intercoder reliability was high, the coding was still subject to the interpretation of each individual reviewer and may vary between different groups of reviewers.

5 FINDINGS AND DISCUSSION

The following section discusses the key findings of the analysis, for the various coding categories that were examined.

TikTok Algorithm / General video features and engagement metrics

One of the parameters investigated is the characteristics and qualities of the videos that TikTok chooses to serve when a user searches the platform for stress-related hashtags. As discussed, the platform's unique algorithm favours content that has a high-performance rating, in terms of its competition ratio, as well as the number of shares, comments, and likes (Geysler, 2022). The videos collected had an average of 5.4 million views and a median of 2 million views, indicating their popularity. Such high numbers are not uncommon on TikTok, as the number of views is not linked to the number of followers, which is the case for other platforms, such as Twitter. Hence, videos are exposed to wider and new audiences, based on their popularity, among others (McKinnon et al., 2021). Indicatively, a video by a well-known pop artist had 71 million views on TikTok, where the artist had 5 million followers, compared to 2 million views on Twitter, where her followers amounted to 45 million (Doyle, 2022).

The videos examined also had an average of around 800K likes, 6.5K comments, and 19K shares. Almost 90 percent of the videos served were uploaded in the previous six months, with a more-or-less equal distribution through time. They were also primarily in the English language, which was something anticipated as the platform and the hardware used to access them were set to the English language.

Creators' Profile and Platform Activity

Another parameter examined was the profile of the creators. The basic demographics of the users that had uploaded stress-related content mirrored the profile of the average TikTok user, being predominantly female and belonging to the younger end of the scale, where such characteristics of identity could be recognised or were discussed by the creator (Shepherd, 2022). To compare, the female creators comprised 64 percent of the creators that indicated their gender, a percentage that is reflective of the average TikTok user, who is 61 percent female (Ceci, 2022). Accordingly, the creators were identified as 50 percent belonging to Generation Z, 32 percent as Millennials, and 9 percent as adolescents. The remaining 9 percent were older. Interestingly, the hashtag #StressRelief seemed more popular among the older section of the creators and was the only hashtag under which three baby boomer creators were found.

The creators are also very active on the platform, as over three quarters of them (77 percent) have uploaded more than a hundred videos. Each creator has an average of 926,300 followers and over 26 million likes (26,119,000). However, only 11 percent of the creators are verified, and feature the blue check badge next to their name. The "verified" badge, which is a standard feature on other

social media platforms such as Instagram and Facebook, is provided by TikTok to verify the identity of the individual represented by an account. The badge can be awarded to any user who applies to the platform, once it is demonstrated that they comply with the platform's terms and conditions, as well as being an active creator with unique content. Even though it does not signify the platform's endorsement, the badge is often used by notable or popular creators to indicate the authenticity of their content (TikTok, 2020).

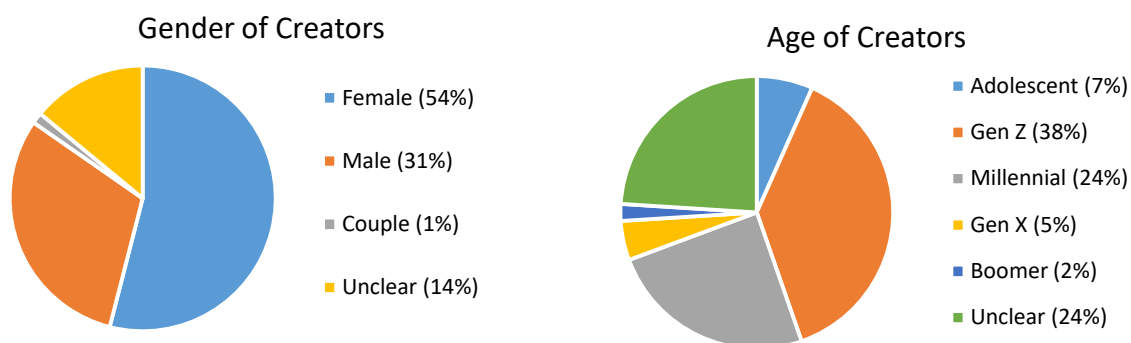


Figure 2: Demographic Profile of Creators

Content by Professionals and Average Users

Regarding their professional identity, the creators were classified as either Professionals or Average Users. The former code described the creators who self-identified through a description of their profession, either within the video or in their Bio section, and whose content and occupation were related to the topic of mental health. Everyone else was assigned the code Average Users. Accordingly, the videos submitted by professionals, such as psychologists and other mental health practitioners, constituted 37 percent of the content examined. For most of these professionals, stress and mental health are recurring content topics.

Of the professionals, 23 percent introduce themselves as Life coaches and 12 percent as Fitness Coaches. Among the professional creators, 31 percent are doctors, psychologists, and other licensed practitioners. The Nutritionists comprise 10 percent of the creators, and another 10 percent are involved in Arts & Crafts. The latter were coded in the study as Professionals in the area of Mental Health, based on their content and research indicating that arts and crafts can help manage stress, serving as an outlet to release challenging emotions, such as anger, anxiety, and irritation, in a personal and expressive manner (Martin et al., 2018).

Professionals use the TikTok tools to promote their content to a larger degree than the average users. A popular tool is hashtags that enables discoverability through algorithmic selection. Hashtags allow users to categorize their videos and make them easier to find. The use of hashtags to "tag" videos allows users to view and interact with multiple audiovisual clips in succession on the same topic, allowing them to view a thread of related posts on a topic of interest. They also help to create a sense of community around certain topics or interests. For example, there are popular

TikTok hashtags such as #dance, #comedy, and #food. These hashtags allow users to find videos that are relevant to their interests. Operating as a memetic trope, hashtags – like other elements of digital platforms, such as profile tags, audio, effects, or viral themes - are identifying signs of connectivity (Pérez-Rodríguez et al, 2022), "a register for the realm of feelings, ideas, and beliefs (Papacharissi, 2015) and a "way to emphasize values, experience, attitudes and opinions in the message" (Pilař et al., 2021). The average amount of hashtags used by professionals is 6.5 per video, much larger in comparison to the average of 4.7 used by other creators. According to the practitioners, the recommended number of hashtags per video is 3 to 4 (Sabin-Darget, 2022).

However, the engagement garnered by the Professionals' content did not reflect the increased use of hashtags. Even though professionals' videos did not differ much in tone of voice and message, they had approximately 40 percent fewer views, half of likes and comments, and 40 percent fewer shares. Furthermore, even though professionals have the same number of followers as average users, their total number of likes is half as high. If we conceptualise these engagement metrics as markers of popularity in the social media sphere (Guinaudeau et al., 2022), then non-professional creators appear to be more popular than professional ones. This result can be explained by the fact that social media users show a preference for peer-generated content compared to brand-generated content, with research showing that over half of them find this type of content "more trustworthy and authentic" (Olapic, 2019). Likewise, Zheluk, Anderson, & Dineen-Griffin (2022), in a study that analysed acute back pain content on TikTok, found that health professionals were largely absent from the most popular videos examined in this study and that amateur, non-mainstream, and alternative content was more popular among TikTok users and received higher engagement rates, despite the fact that this content did not generally reflect contemporary evidence-based practice.

Fundamentally, it is also closely related to the prevalence of user-generated content in today's digitalized participatory cultures⁶, whereby average users are afforded the technologies of content creation and distribution, as well as the creative opportunities to not only "broadcast themselves," but also "develop and maintain an audience" (Marwick and Boyd, 2011: 140), build a "branded self" (Senft, 2013), even achieve a micro-celebrity status (Marwick, 2015). As Marwick has argued, social media-based metrics (such as likes and followers) are transforming status "into something that can be quantified, qualified, and publicized" (2013: 206), meaning that achieving online attention entails both 'high visibility' as well as the highly valued "ability to command an audience" (2013: 77). The combination of visibility and audience-building helps render an online persona, or self-brand, increasingly valuable with each click and view. In this light, Marwick sees a danger in this new way of measuring status: what she calls 'the problem of equivalence' (2013: 219-220), which is the tendency to evaluate individuals based on their social media presence rather than actual actions. The danger arises because it becomes difficult to tell whether a person's actions are truly representative of their perceived value and worthiness. In the attention economy of TikTok (Abidin, 2020; Goldhaber, 1997), visibility is not the exclusive domain of professional creators. In fact, the creators themselves may take a back seat in a medium that is decidedly content-centric.

⁶UGC has been defined by OECD (2007) as content created 'outside the realm of a profession and professional routines.'

Another observation that may explain the lower engagement metrics of professional content was that these videos were longer, averaging 32 seconds, which was 10 seconds longer than the other videos. The length of videos is an aspect of the platform worth discussing further here. Initially, TikTok differentiated itself from its competitors by featuring primarily short videos, with the platform suggesting in its internal documentation that the better-performing videos were between 11 and 17 seconds long. A year later, the recommended length doubled to 21 to 34 seconds (Stokel-Walker, 2021b). According to industry experts, the platform currently favours long videos, having increased the maximum video length from one minute to three minutes, in a move that was considered to make the platform more appealing to advertisers, as it would attract audiences used to longer videos, such as those found on YouTube and other video-based social media (TikTok, 2021). The short video length, however, was considered one of the drivers of success for the platform at its launch. In fact, for the Generation Z and Millennial users, that constitute the majority of the platform’s audience, the short-form video format is what motivates them to continue using TikTok (Cuesta-Valiño et al., 2022). In addition, data from a survey conducted by the platform indicated that almost 50 percent of users found videos longer than a minute were stressful, with a third of users watching videos online at double speed (Stokel-Walker, 2022). To quote a user in his 20s surveyed by the platform, "It’s not because I don’t have time, but because I can’t concentrate. I can’t concentrate" (Stokel-Walker, 2021a).

	Average Number of Views	Average Number of Likes	Average Number of Comments	Average Number of Shares	Average Number of Hashtags
Non-Professional	6,342,991	955,886	7,607	21,559	4.7
Professional	3,854,662	475,962	4,228	13,478	6.5
All Users	5,401,580	789,512	6,435	18,757	5.4

Figure 3: Engagement & Hashtags per Type of Creator

Content Characteristics

In regard to the setting, the majority (83 percent) of the videos were shot indoors, primarily at home (56 percent). This finding is congruent with the do-it-yourself, home-made nature of the platform’s content, as well as with the “bedroom culture” of domesticated personal media use that is prevalent among screenagers (Livingstone, 2007). However, it can also be attributed to the COVID-19-related conditions that prevailed at the time, such as lockdowns, self-isolation, and other limitations to mobility.

Sound was also examined as being one of the most extensively used tools to promote content on the platform. In contrast to Facebook and Instagram, which are more static and textual, sound is an

integral part of the TikTok experience. As shown in a survey conducted in February 2022 by Influencer Marketing Hub, 90% of users agree that sound is "key to the TikTok experience" (Molenaar, 2022). After all, the predecessor of TikTok was Musical.ly, a video-sharing application, the beloved app of the early cohort of preteen users, or "Musers" (Savic, 2021). The Chinese ByteDance company bought Musical.ly in 2017 and renamed it TikTok. TikTok has remained a music-centric platform, with various in-app features related to sound and music (e.g., audio library, music discovery section), which have many parallels to music-streaming platforms such as Apple Music, Deezer, or Spotify (Kaye et al., 2021). TikTok encourages users to employ sound as a search tool for other videos that share the same audio, as a means of connecting among users. On TikTok, users have more chances to go viral by using trending sounds (Kaye et al., 2021; Molenaar, 2022).

The importance of sound that acts as an affordance, namely as an anchor with the purpose of guiding TikTok creators to participate in memetic challenges, has led Kaye et al. (2021) to employ the term "aural meme." The use of aural memes is so widespread that songs in the top spots of hit charts have been noted to become popular first on TikTok, such as the song "Old Town Road" by Lil Nas X (Strapagiell, 2019). Accordingly, in the sample examined in StressTok, only 39 percent of the videos by the regular creators featured original sound, a number that climbed to 73 percent for the professional users. In line with the memetic role of sound, a third of the videos featured a music track alone. The number is much smaller (23 percent) for the content uploaded by the Professionals, as they tend to talk to the camera.

A key aspect of the content featured on social media is text. Almost 90 percent of the videos featured text on screen, whose purpose was to clarify the video content, explain its narrative, or provide closed captions. Considering that Millennials and GenZ, the primary TikTok audience, are called "the mute generation," as they tend to keep their phones on silent mode, text is essential for providing context and information, as the creator cannot rely on sound alone (EU Business School, 2022).

Hashtags also play a key part in a TikTok video's textual content. In total, 843 hashtags were counted among the 150 videos (an average of 5.4 per video), the majority of which related to stress, anxiety, and other mental health concepts. It is interesting to note that the number of hashtags varied for the three content categories that were examined. Thus, the videos under #stress featured 219 hashtags (4.38 on average), with #selflove and #selfcare being among the most frequently recurring. The videos under #anxiety featured 297 hashtags (5.94 on average), with #relatable featuring highly in the list. Lastly, the videos under #stressrelief featured 327 hashtags (6.3 on average), with hashtags such as #ASMR, #calm, and #stressball appearing frequently too. Prominent among them was also the hashtag #fyp, which stands for For You Page, and which was used in one third of the videos, because it is inaccurately believed that it enhances the virality of the video (Patel, 2022). This hashtag was followed closely by #foryou and the more playful #fyp👉. The maximum number of hashtags on one video was 33, which is considerably higher than the 3-5 hashtags per video recommended by social media specialists based on the maximum number of characters allowed in the caption (Zote, 2022).

Another aspect examined was the tone of voice and look of the videos. The tone of voice of a piece of content is an important factor in how people respond to it, especially when it comes to video content. It communicates the source's personality (Meyer, 2016) and has a direct impact on viewer response, which is why content creators strive to come across as relatable and approachable (Su, 2020). A conversational tone of online voice can help generate more content, create a higher social presence, increase awareness, and even help promotional efforts (Barcelos et al., 2018; Janornik et al., 2020; Kelleher, 2009).

In alignment with the platform and despite the ostensibly sombre nature of the subject matter (mental health/stress), the tone of voice in the examined posts was found to be largely positive and cheerful, with the top descriptors being 'Friendly' (43 percent), 'Casual' (36 percent), 'Playful' (22.4 percent) and 'Upbeat' (21.1 percent). This was the case for the professional videos, too, with a very small number of them being characterized as serious and authoritative. Only 12% and 5% of the films were described as 'Professional' and 'Authoritative,' respectively. In fact, only 3 out of the 50 videos by professionals were characterised as 'serious' (6%), compared to 13 out of the 100 videos by the non-professional users (13%).

The largely positive and optimistic tone of the content is hardly surprising, given the "trope towards positivity" that prevails in the social media attention economy (Berryman & Kavka, 2018). Indeed, the tendency toward positive content has been extensively observed in online networks, where individuals are more inclined to share content that they consider positive (Fairchild, 2007; Gingiss, 2019; Marwick, 2013; Senft, 2013). This has been referred to as social media's "positivity bias" since social networking environments have been found to foster positive types of self-presentation over negative parts of the actual self (Reinecke & Trepte, 2014; Schreurs & Vandenbosch, 2022; Spottswood & Hancock, 2016). This is largely due to the commonly held belief that content portraying positive, optimistic moods and personalities is in turn regarded more positively and thus gains greater attention and popularity. For instance, an experimental study by Forest and Wood (2012) demonstrated that positive status updates on Facebook received more favourable feedback from friends than negative updates, findings that are consistent, to some degree, with theories of affiliation and self-disclosure, as well as with the principles of contagion in social networks. More recently, research conducted during the pandemic found that influencers who adopted a "positive approach" in their communication strategy—meaning an emotive, supportive, and empathetic tone of voice—conveyed credibility, stimulated para-social interaction, and most importantly, prompted more positive attitudes in their audiences towards disease or fears triggered by the pandemic (Moraru, 2022).

This tendency is even more evident on TikTok, with 70 percent of its users claiming that the biggest benefit of the platform is its entertaining nature. Indicatively, the second benefit, which was the platform's educational nature, was voted by only 32 percent of the users (Rajnerowicz, 2022). Accordingly, around 65 percent of the users vote humour as their favourite content category, a point that is confirmed by the fact that #comedy and #funny are the only content descriptors that made it to the top ten hashtags for 2022 (Rajnerowicz, 2022; Top 10 HashTags on TikTok, 2022).

Regarding cinematography, the majority of the videos were shot as a "selfie," with the camera held at arm's length in portrait mode. This is consistent with previous research findings, which found

that self-produced videos were the most common type of TikTok video across different contexts of use (Amsalem et al., 2022; Dezuanni et al., 2022; Literat et al., 2022; Suárez-Álvarez & García-Jiménez, 2021). It also further confirms that selfies are indeed the "visual culture of (a) new digital society" (Sezgin, 2018), a "rampant social media activity" (Shah & Tewari, 2016) enabled by the medium's affordances, as well as an "effective outlet for self-definition" (Murray, 2015). It is worth noting that this is also the way the content is consumed, as the viewer holds the phone close to their face, resulting in an intimate proximity between creator and user that can enhance rapport and affinity. A small percentage (13%) of the remaining videos were shot with a camera at a distance. An even smaller percentage was animated footage.

Sources and Symptoms of Stress

The purpose of the research, aside from profiling the creators and their usage of the platform's tools and affordances, was an initial attempt at mapping the content of the discussions around stress, anxiety, and stress management on TikTok. In this aspect, the authors considered different aspects, such as sources of stress, symptoms, and proposed solutions.

It is important at this point to clarify the key terms of stress, anxiety, and stress management. Even though stress and anxiety are often used interchangeably, academics in the fields of psychology and psychiatry explain that they are actually two different things. Technically, stress is defined as "a substantial imbalance between environmental demands and the response capability of the focal organism" (Rauch et al., 2018). It is therefore considered to be the individual's response to an external cause and recedes once the situation has been resolved. In reality, stress is a common experience of contemporary daily life, as all people are exposed to stressful events and situations that affect their physical and mental health (Cohen et al., 2019). Financial worries, everyday hassles, and life-changing events are the most common factors that trigger stress. Stress is not commonly considered a mental health issue; however, it is linked to mental health in a variety of ways: excessive and chronic stress can cause mental health and physical issues, as well as worsen existing ones (WHO, 2021).

Anxiety, on the other hand, is considered to be more severe than stress. Much of the scientific debate over the exact meanings of the two words stems from the fact that stress and anxiety are inextricably linked, frequently causally (Endler et al., 1990), and have intertwined behavioural and neural underpinnings (Daviu et al., 2019). Both are emotional, psychosomatic responses to stressful situations and display similar mental and physical symptoms (such as tension, muscular pain, impaired concentration, and insomnia). However, "stress is an immediate response to an external demand, whereas anxiety is more general, future-oriented, and is typically not attributed to one specific cause" (Vahedi & Saiphoo, 2018: 348). Anxiety is defined by a "persistent feeling of apprehension or dread" in situations that are not actually threatening, and it usually persists after the threat has subsided (Franzi, 2018). As WHO (2022a) explains, in severe cases, anxiety may progress to anxiety disorder, one of the most prevalent mental chronic conditions globally. In such cases, the experience of anxiety is so severe that it impacts detrimentally on an individual's daily

functioning and their overall health. Anxiety mixed with depression, generalized anxiety, panic disorder, phobias, social anxiety, obsessive-compulsive disorder, and post-traumatic stress disorder are all types of anxiety disorders (WHO, 2022a).

On the other hand, stress management is the concept that describes the use of specific techniques, strategies, or programmes for dealing with stress-inducing situations and the state of being stressed (American Psychological Association, n.d.). General stress management can include adaptive coping (e.g., distraction), physical relaxation strategies (e.g., diaphragmatic breathing), cognitive reappraisal (e.g., reconsidering the stressor from a different perspective), and mindfulness (i.e., increasing awareness of the present moment) (Doan et al., 2017).

In the examined TikTok posts, we found that only one third of the videos mentioned sources of stress. In 26 percent of them, stress is attributed to social anxiety, and in 16 percent, it is associated with the anticipation of a specific challenging event. For the younger creators, stress was associated with school (10 percent), family (8 percent), or personal appearance (6 percent), factors that are aligned with the findings of contemporary research on causes of stress among youth (Bhargava & Trivedi, 2018; Gonmei, 2017; Kohli, 2022). The high position of school as a stress factor among young people is indeed an issue nowadays, as the Global Organization for Stress reports that stress is the number one health concern of high school students (Patterson, 2022).

Work as a source of stress was also noted in a few videos, primarily those uploaded by Millennial users. This finding was expected, as work ranks high on the list of stress factors outside the platform too. In fact, it is estimated that 80 percent of US employees feel stress at work, with half of them saying that they need help with stress management. Globally, stress levels in the workplace are increasing, with 6 out of 10 workers experiencing an increase in workplace stress in major economies. Among them, China has the highest rise in workplace stress, at 86 percent (Global Organization for Stress, 2018).

According to research, the symptoms of stress are numerous and varied. The American Psychological Association states that 45 percent of the population experience anger and irritability, and 41 percent experience low energy and fatigue. These are followed closely by lack of motivation or interest in things (38 percent), anxiety, nervousness or worry (36 percent) and feeling sad or depressed (34 percent) (Clay, 2011). Among the videos examined, almost 60 percent of the videos do not mention symptoms of stress. Of the remaining, 27 percent discuss a combination of symptoms, 14 percent regard panic attacks and adrenaline rush, and another 13 percent discuss their direct opposite, melancholy, and depression. Regarding further symptoms of stress, other creators discussed changes in sleep patterns, difficulty to concentrate and skin problems. The content around symptoms occurs primarily under the hashtag #Anxiety.

As their main purpose, almost 24 percent of the videos focus on offering some form of advice, which was expected given that seeking and sharing health related information and advice is a central part of contemporary digital health practices. Fifteen percent of the videos are intended for

"entertainment", notably those with the #Stress hashtag. Another 15 percent aim to calm the viewer, with soothing sound, relaxing images, and repetitive motions.

Giving advice and helpful ideas, amusing an actual, imagined, or potential audience, or attempting to directly, though virtually, improve the viewers' psychological or mental state, can all be seen as manifestations of online prosocial behaviour, which has defined internet cultures since their early days (Sproull et al., 2013; Wright & Li, 2011). In the case of TikTok, indeed, much of its sharing falls under online prosocial behavior (OPB), conventionally described as voluntary behaviour that is meant to benefit and help others (Lysenstøen et al., 2021), even if such behaviour is not aimed at individual persons but at the TikTok community as a whole. There are several possible reasons why someone might choose to engage in prosocial behaviour online, including a desire for support and connection, the need to raise awareness about mental health issues in general, or simply the challenge of explaining the complexities and nuances of one's own condition in a way that others can easily grasp. Ultimately, though, what seems to drive much content creation online is the desire to help others who might be facing similar challenges.

This explains why OPB is viewed as one of the positive aspects of social media in relation to mental health (Lysenstøen et al., 2021; Kinnunen et al., 2016). Research demonstrates that exposure to prosocial content can increase prosocial thoughts and feelings, increase empathy, and increase helping behaviours among content consumers (Coyne et al., 2018; Greitemeyer, 2011). Furthermore, there is evidence that exposure to OPB can increase people's prosocial behaviour not only on social media but also offline (Lavertu et al., 2020; Wright and Li, 2012), as well as evidence that information sharing around mental problems in social media can lead to an increase in confidence and destigmatization (Amsalem et al., 2022; Balani & De Choudhury, 2015). Some recognise online sharing as a kind of coping mechanism in and of itself (Berry et al., 2017; Sangeorzan et al., 2019). As the Pew Research study on "The social life of health information" (Fox, 2014) showed, Internet users also have the expectation to receive useful content from other users online, and commonly utilise social networking sites to express comments or questions about health-related issues and to follow other people's health information experiences. As the study's author writes, this is "the confluence of two powerful forces: an ancient instinct to seek and share advice about health and a newfound ability to do so at internet speed and at internet scale" (Fox, 2014). The Internet has indeed played a large role, providing platforms for people to share information, advice, and connectivity with others who are going through similar struggles. TikTok is a highly immersive platform with an infinite stream of topic-related content, and prolonged usage of the site can result in the gratification of users' needs, including those for mental health information and guidance (Montag et al., 2021).

Regarding the purpose of "entertainment," it is unquestionably an important value for TikTok. TikTok has been marketed as a creative entertainment platform (TikTok, Inc., 2020), and the gratification of users' entertainment and affect needs has been one of its main draws, as well as a factor that is relevant to the prolonged usage of the platform (Bucknell & Kottasz, 2020; Kemp, 2022; Wang, 2020). The latest data by the Global Web Index demonstrate clearly that TikTok is indeed an entertainment channel, with a massive 77 percent of the platform's users saying that they use TikTok to "look for funny or entertaining content," with the second motivation (33.9%) being

"posting and sharing videos"⁷ (Kemp, 2022). Interestingly, entertainment seems to be a trope even when it comes to topics that we would not normally think of as being entertaining. In their research of the #Neurosurgery hashtag, McBriar et al. (2022), also found that entertaining content was the most popular type of content, even if the videos were about neurosurgery.

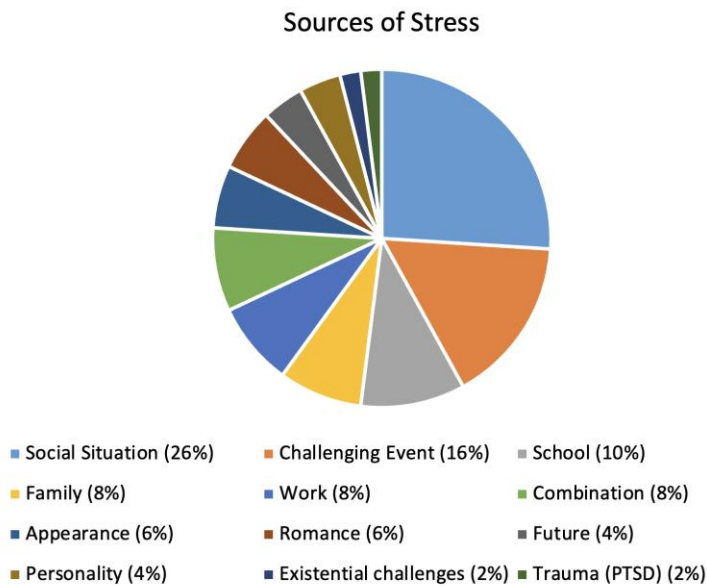


Figure 4: Sources of stress, as discussed in the videos

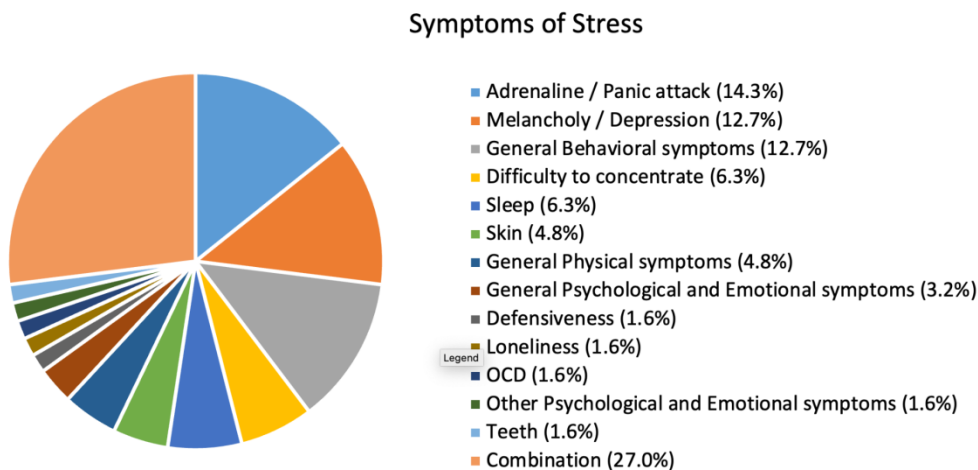


Figure 5: Symptoms of stress, as reported by the creators

⁷ It is also important to note that the reported figures do not include data for Douyin – ByteDance’s “TikTok for China”, which the company reports separately, or the massive social media market of India, where TikTok is still banned.

Proposed solutions and coping techniques

The majority of professionals' videos, as expected, propose a solution (42 out of 58, or 72 percent). Among them, 20 propose a physical exercise, 5 propose a mental exercise, 2 propose meditation, another 2 propose a hobby, and only one proposes seeking professional help in the form of counselling. Average users' videos also propose a solution, but to a lesser degree, with only a third of them suggesting a coping strategy. Of them, almost 30 percent propose a physical exercise, and another 20 percent propose a mental exercise. Hobbies and socialising follow next with just over 10 percent each. Other research, such as the study of #mentalhealth related TikTok content by Basch et al (2022), has found that coping strategies were visible in only about 10% of the videos with high numbers of total views, indicating that they were rarely the focus of creators.

Regarding this study, it is worth noting that none of the solutions proposed are supported by scientific evidence or proof. In fact, one of the most commonly given pieces of advice was to take showers in ice-cold water, as proposed in 4 videos, which may actually result in a heart attack (Keatinge et al., 1964; Tipton, 2019). Health information on social media should be approached with caution. The way social media is designed makes it easy for false or misleading information to spread quickly and widely (Zheng, 2020). This can be tremendously harmful for people who are looking for accurate information about their health, especially if they are dealing with a chronic or mental illness.

ASMR Content

A mention should be made here regarding a special type of video that featured prominently in our list (about 10 under each hashtag), the so-called ASMR videos. The acronym stands for Autonomous Sensory Meridian Response and is used as a hashtag to indicate TikTok content that gives the viewer a pleasant, tingling sensation (Ellis, 2017). These videos are a subcategory of the Oddly Satisfying videos seen on YouTube and other video-sharing platforms, which were recognized on Instagram as the fastest-growing niche in 2018 (Singh, 2021). They rely on calming sounds, repetitive motions, or soothing actions, such as a person making calmly tea, a hand squeezing a stressball, or a young woman gently plucking away the stress from the viewer's screen with a repetitive tongue-clicking sound. ASMR videos are part of TikTok's memetic vernacular (Zulli & Zulli, 2022), an aesthetic and communicative trope that is specific and native to the platform and the meaning-making practices of its users (Schellewald, 2021). This type of content has been found to decrease heart rate, sadness, and overall stress levels (Poerio, 2018), help with sleep deprivation (Janik McErlean, 2017), and even improve symptoms of depression and chronic pain in those who engage in ASMR (Barratt & Davis, 2015). Numerous studies are currently taking place to record the health benefits of ASMR (Health Benefits of ASMR, 2022). Its effects were also observed during the pandemic on multiple platforms, aside from TikTok. Twitch, a video live streaming service, recorded in 2021 a 38 percent increase in hours per day spent watching ASMR content in one month alone, with a total increase of over 100 percent within the year (Nelson, 2021). The amount of ASMR content consumed on the platform between January and September of that year also tripled (Michael, 2021). Likewise, according to a survey by Tidio, "satisfying/calming

videos” are among the favourite TikTok content categories, while a 10% of the respondents in the same survey state that “improving your mental health” is one of the advantages of using TikTok, even if that is through entertaining, funny, or weird content (Rajnerowicz, 2022). The featuring of ASMR and other Oddly Satisfying content on TikTok suggests that the platform can act as a curative agent itself, with the stress-reducing and calming effect of its content.

6 RECOMMENDATIONS FOR FURTHER RESEARCH

This study is largely descriptive in nature and not intended to comment on the factual accuracy of the information presented in videos. Further research could examine the characteristics of individual TikTok videos to determine the degree of congruence between the coping strategies proposed by TikTok videos and the professional stress management techniques recommended by official and professional entities.

More correlations would also be useful. For example, linear regression analyses could be implemented in order to identify if the creator type of the video, the video category, or video characteristics (e.g., filters, sound, special effects, or video length) were correlated with the video's rank and popularity.

Future research can also include a larger sample of videos or more related hashtags, and use automated methods, such as data mining, machine learning, or sentiment analysis, to reveal a more comprehensive picture of Tik Tok accounts. Furthermore, it would be useful to examine, beyond the site of production, how community, knowledge and support can be mobilized around content and discussions under the #stress and #anxiety hashtags.

7 CONCLUSIONS

This study lies at the intersection of social media and mental health, adding to the body of research of how these two domains are associated. The "coming together" of social media and mental health is happening on several levels. Users seek information and community, and they also create content to be shared with a vast audience. Social media are used by both amateurs and professionals and for different motivations with regard to mental health.

Mental health is often viewed as a taboo topic, but more and more people are beginning to open up about their experiences with mental illness. In recent years, there has been a movement to destigmatize mental health issues and encourage open discussion about these topics. Social media has played a large role in this shift, providing platforms for people to find informational resources on a variety of health issues, including mental health, share their stories, and connect with others who are going through similar struggles.

The study's findings reinforce the idea that TikTok is being used as a channel for user generated content related to stress, anxiety, and stress relief, and that it is suited, because of its affordances, to adapt to the changing needs of people living with mental health issues today. The app provides a unique and immersive sociotechnical environment for people to connect with each other and make their individual and collective experiences visible, while sharing their experiences, knowledge, and creativity. The TikTok stress community comprises industry professionals and regular users who post about stress, one of the most active themes for content creation on social media in the twenty-first century. From sharing stories and experiences to offering advice and support, TikTok has become both a hub of information and a vital resource for many people dealing with stress, anxiety, and other mental health issues, at a time when the levels of these conditions are rising globally. For example, the #mentalhealthawareness hashtag has been used over 5 billion times on the platform, and there are many other hashtags and challenges that are being used to start important conversations about mental health on the popular platform.

The use of social media as channels for information health communication and intimate self-expression, even disclosure, shows the embeddedness of social media in the realm of everyday experience. These platforms have been operating as mediators of human experience, sociotechnical environments through which people channel their basic, primal needs for information and interaction, as well as their desires for visibility, attention, and even monetary gain. The use of TikTok to share content, experiences and feelings of stress and anxiety can also be viewed as a positive strategy to cope with stress by expressing these feelings and enjoying the support of "followers" and friends.

TikTok can serve multiple purposes in the discussion around mental health. It is used to share experiences, solutions, and support, but most interestingly, it can act as a curative agent itself, with stress-reducing and calming content. We believe this is an area worth examining further, especially considering the high engagement and rapport built between creators and users under the stress umbrella on TikTok. In addition, the research showed that non-professional creators achieve higher

engagement compared to professionals, so the intentional dissemination of mental health related content should rely primarily on creators that are not perceived as 'commercial'.

Providing advice and entertaining content also seems to be primary purposes of the videos examined, in alignment with other research data, such as the 2022 Pew Research study, according to which the majority of TikTok users are using the service to find funny and entertaining videos, while only 16 per cent say they use it to communicate with friends and family (Kemp, 2022). This is markedly different from the behaviours that we see on Facebook, where more than 7 in 10 users say that they use the platform to communicate with other people. As Kemp interestingly concludes: "Ultimately, "social" is a behaviour, not a channel, and these latest user trends suggest that each of the top platforms now occupies quite different functional and emotional spaces in people's lives" (Kemp, 2022).

However, the way social media, including TikTok, have been designed, makes it easy for false or misleading information to spread quickly and widely. This can be extremely harmful for people who are looking for accurate information about their health, especially if they are dealing with a chronic or mental illness. Prior research shows that the validity of mental health care information provided through websites is poor or insufficient (Reavley et al., 2022), although mental health information provided to parents of young people on internet forum was found to be more consistent with scientific evidence (Mertan et al., 2021). Regarding TikTok specifically, a 2022 analysis of 500 mental health related TikTok videos by medically trained professionals from the virtual health counselling platform Plush Care, found that 36.11 percent of TikTok content on Anxiety was inaccurate, while 13.89 percent of this content was evaluated as being potentially damaging (Plush Care, 2022).

The changing nature of social media, which is constantly evolving, demands the continuous exploration of their usage and the diversity of medium appropriations that make humans' ideas, stories, experiences, problems, needs, and desires visible. It also necessitates an awareness of the risks and challenges associated with information and content sharing in a social media context.

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