INVESTIGATING THE EFFECTS OF SOCIAL MEDIA ON THE WELL-BEING OF TEENAGERS

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Abstract

There has been a positive association between screen time and depressive symptoms among adolescents. Research has found that using social media will increase self- comparisons especially if the engagement is passive. This would therefore increase the chances of depression and lower well-being. However, after investigating social media further, I found that the results were counter-intuitive and controversial on an individual level, especially for the youth. The objective of this work is to investigate the effect of social media on the well-being of teenagers. For this research paper, I asked many students to refrain from the use of social media for 33 hours and then tested their happiness score before and after. Then, I conducted a t-Test which showed a statistically significant difference in the mean of happiness scores before and after the experiment.

Keywords

Social Media, Happiness Score, Well-Being, Performance in School, Self-Esteem, Teenagers, Screen Time

1. Introduction

Social media is a platform where various videos, pictures, locations, and music are shared with people worldwide. It is a way of expressing personalities, hobbies, interests, culture, and intimacy. We could praise social media for being a significant contributor in comprehensively embracing diversity and raising awareness on countless social, cultural and political issues due to its convenience and practicality.

However, there is something that is exciting in social media and that is the use of positive intermittent reinforcement (PIR); which is also used in slot machines to see what you won. This is a design technique that is also used in social media, every time you pull down your social media page, you get new posts from different accounts, but you do not know what the latest posts are going to be or who shared it and this operates exactly like slot machines in casinos (Orlowski, 2020). This technique is intentionally implanted into social media to program users to unconsciously keep on scrolling.

Previous research (Verduyn et al., 2017) hypothesized that actively using social media increases connectivity, social bonding, and well-being, while using social media passively can have the opposite effect on an individual by decreasing well-being, increasing social comparisons, and envy (Burke et al., 2010). A study of 10,557 Facebook users who had their Facebook accounts examined for three months, and thereafter were asked to fill out a questionnaire, found that active Facebook users' well-being was not affected; however, users who used Facebook for communication with friends and family were found to have positive results (Burke and Kraut, 2016). This suggests that social media, if used correctly, increases well-being. Therefore, this is supported by another experiment which discovered that those who use social media frequently as a source of communication are more satisfied with their lives (Dienlin et al., 2017) and have more positive attitudes (Hunt et al., 2018).

In contrast, undergraduate students from the University of Pennsylvania were asked to limit their social media to 10 minutes a day or continue using it as usual. The experimental groups showed decreased FOMO, (fear of missing out) anxiety depression, and loneliness (Hunt et al., 2018). Other studies, however found very minimal correlations between social media and life satisfaction/depression (Utz and Breuer 2016, Orben and Przybylski 2019).

A more extensive study of 2897 participant who were told to deactivate Facebook for four weeks found that the experimental group showed slight increase in well-being measures (Allcott et al., 2019). Another study on emotional responses across time (Bayer et al., 2016) investigated emotional outcomes from updating one's status on social media and

found an increased positive effect after 10 minutes, but the positive effects did not last long. Additionally, there is a positive correlation between screen time and depressive symptoms among adolescents (Hoare et al., 2016). The evidence "on-screen" time affecting self-esteem is weak (Hoare et al., 2016) as there are mixed results; but more studies have found negative results (Carson et al., 2016).

There is a wealth of experiments about social media use affecting self-esteem. An experiment was conducted on children aged 10-14 who were interviewed about their social media use regarding appearance relating to self-esteem (Steinsbekk et al., 2018). The experiment found that users who view and respond to others' posts caused a decrease in self-esteem but only in girls (Steinsbekk et al., 2018). Furthermore, Frison and Eggermont, (2017) Rousseau et al. (2017) concluded that when users engage with social media passively (users who respond and view other posts), are likely to have an increase in depression and lower well-being (Verduyn et al., 2017). They are exposing themselves to representations of idolized individuals, which inevitability leads to self-comparisons (Krause et al., 2019). However, active social media users (users that post self-oriented content and interact with other users) correlate with ~~to~~ a healthier well-being and lower levels of depression. This is because the online self-presentations are the best versions of themselves, and that they mainly receive positive feedback. But active social media use can entail many things, including commenting, liking, and sharing other content (Escobar- Viera et al., 2018). Hence, Steinsbekk and Wichstrøm (2018) proposed that 'self-oriented' social media use would consist of personal pictures and updates, 'other-oriented' use consists of behavior such as liking or commenting on other users' posts. These terms have important implications for self-esteem (Festinger, 1954). There is supporting research: browsing your profile does not impact self-esteem, whereas browsing others' profiles does (Gonzales and Hancock, 2011).

Social media has an intriguing yet suspicious way of fixating and obsessing people with Instagram feeds, lifestyle posts, and artificial lives built through the power of social media. Consequently, this consumes people's lives and sucks them into a platform that may be more focused on economic factors and capitalization over social factors by allowing users to create their own 'social media identity' based on Gauntlet's Identity theory (Guantlett, 2008). This theory states that our identities are reinforced through social media. Previous research (Robinson et al., 2021) has stated that social media promotes self-absorption but it could be argued that posting Instagram stories or pictures of yourself would improve self-esteem and confidence levels (Bayer et al., 2016). From my secondary research, I have noticed that research findings are contradicting.

2. Research

The objective of this work is to investigate the effect of social media on the well-being of teenagers. I will investigate this by conducting an experiment to measure whether social media impacts happiness levels of teenagers. I will cover both the positive and negative effects of social media use on the well-being of individuals. My directional hypothesis is that there will be a statistically significant difference between the happiness scores before and after the experiment.

I will also analyze the results of the experiment by conducting a two-tailed t-Test to measure the extent to which my results are statistically significant. I will also correlate those results with pre-existing research.

3. Methodology

First, I selected 32 participants using target sampling. I went up to student's year 12 during our free lessons, asking them whether they could complete a questionnaire. I turned the link to this questionnaire into a Q.R. code and asked participants whether they could complete it to ensure participants felt comfortable and did not feel any peer pressure. I also did not want to force anyone or make them believe that this was compulsory by giving them the right to withdraw at any time. This way, the research would be ethical - considering some people find questions about their social media use (like the number of hours they spend on social media every day) to be private or sensitive information due to personal struggles (mental health, procrastination, cyberbullying). Once participants access the questionnaire, I left the premises to limit researcher bias as much as possible as I did not want to look intimidating or make them feel rushed. I wanted to receive the most accurate results possible thereby increasing the internal validity of this primary research. All participants knew I was available nearby to inquire about a question if they did not understand it. All participants who completed this questionnaire go to the same school in Dubai and are in year 12. Therefore, the results may not accurately represent all teenagers within the 16-18 age range as there may be culture bias.

During my free lesson, I asked students in year 12 whether they would be willing to stay off social media for 33 hours and complete the happiness quiz (https://www.pursuit-of-happiness.org/science-of-happiness/happiness-quiz/) before and after the experiment begins. I selected my participants using opportunity sampling by going into the study room and asking for their consent (detailing the nature of the study's goals to potential participants). I did not

want to deceive participants of the true meaning of the experiment as this would be unethical, which would mean that I would have to give participants retrospective consent. Participants may have also felt annoyed and so chose to withdraw their data. While selecting participants, I asked around 80 students, and only 42 individuals agreed; four withdrew during the experiment. Students who disagreed felt that it was too complicated and doubted they could complete the entire experiment. Some students asked for time to decide and then informed me whether they would be taking part or not. Social media platforms participants were not allowed to use were Instagram, Snapchat, TikTok, Facebook, Twitter, Pinterest, and Messenger. Email, YouTube, and WhatsApp were permitted for educational and family purposes.

Participants were told to stay off social media starting from 12am to 9pm the next day (33 hours). I communicated with the participants on the day where they collectively deprived themselves of social media to check whether any participants withdrew from the experiment and did not open any social media apps so far. Moreover, I ensured all participants understood the aims and objectives of this study, and I made them aware that they could ask me any questions about the experiment. I conducted this experiment twice to control and monitor participants carefully in each experiment.
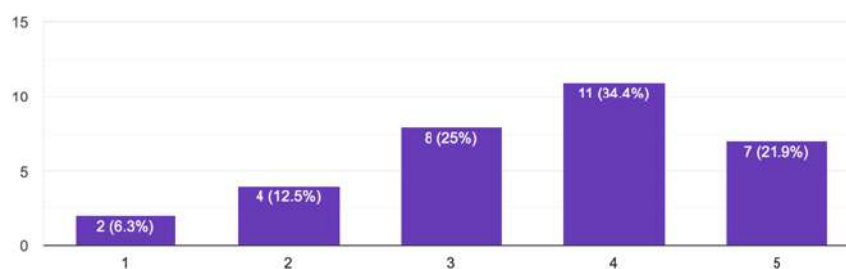
4. Results

I included both open and closed questions within this questionnaire. I used closed questions by asking my participants to rate themselves based on a question using a scale of 1-5, and I used open questions by including some answer choices that do not consist of numbers. Using open questions would mean that the results would be more complicated and time-consuming to analyze than closed questions. However, I would gain a lot more detail through open questions.

Participants were asked on a scale from 1-5, how much they enjoy spending time on social media. Most respondents (80%) reported that they enjoy spending their time on social media with a tie between option 4 and a 5 on the numerical rating scale. Indicating that social media is still entertaining and users are happily accessing it. But does this come from users' being social and interactive or does this come from playing their part in modern consumerism? Moreover, no participant selected option 1 or 2 which suggests that social media users are truly satisfied when they spend their time on social media. The rest of my participants (18.8%) selected the option 3 which means I can infer that my participants find social media quite enjoyable.

Most of my participants (34.4%) stated that social media impacts their procrastination levels daily, scoring 4 out of 5 as can be seen in Figure 1 below. This means that social media may be damaging this generation's degree of education and knowledge as teenagers feel less motivated to study, read, and get an internship to gain real-life experience. Yes, social media can provide entertainment (Figure 18), but this source of entertainment can lead to overindulgence in perhaps not very useful things, reducing the time that could be spent on beneficial activities. Still, since the modern world has become more technologically based, spending time on social media platforms and looking at media products could be an extremely positive move as this may be the more up-to-date method for 'gaining experience,' primarily because social media platforms are incredibly business-driven- as I concluded from my research. Around 25% (8 participants) selected a 3 out of 5, which is moderately acceptable. Similarly, 21.9% (7 participants) selected the maximum option – a 5 out of 5. This score could be viewed negatively or, depending on how users use social media; this could be highly advantageous because using social media to deepen knowledge on religion, history, current political issues would be worthy of your time. This makes social media a source of information, a result supported by the Uses and Gratification theory by Blumler and Katz (Fisher, 2020) which states that social media can be used for educational purposes.

4.1. On a scale from 1-5, to what extent does social media impact your procrastination level daily?

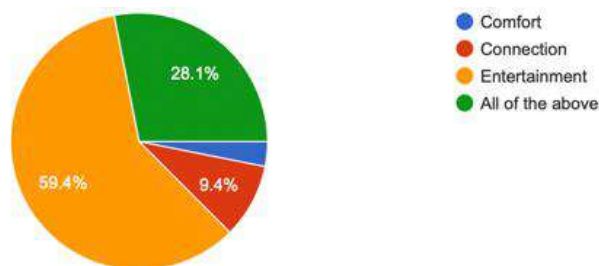**Figure 1:** *Results from Question 1*
(Source: Author)

According to the results, 59.4% of participants state that social media provides entertainment as shown in Figure 2. The other most popular option was 'All of the above,' which was 28.1% of participants' answers. This shows that social media gives them comfort, connection, and entertainment. Theoretically speaking, it could give them comfort due to its drug effect (an increase of dopamine – a happy hormone in your brain) (Robinson et al., 2021). Alternatively, it could be because they are connected with others, 9.4% of my participants selected this option). In addition, using Blumler and Katz's Uses and Gratification theory (Fisher, 2020; Blumler, 1979), social media users use media products (social media being

inclusive) for either entertainment/escapism, education/information, social interaction/personal relationships, or relatability/identification. If a media product provides more than one part of this theory, it could be more popular with audiences (Fisher, 2020). This supports my findings that participants use social media for connection, entertainment, and identification (respondents may have selected the 'comfort' option as it provides them with a sense of relatability and identification with other people).

4.2. What Does Social Media Mostly Give You?

Figure 2: *Results from Question 2*
(Source: Author)

In relation to my results, the majority of the participants stated that social media is 'sometimes' more business-based than social-based. 28.1% of participants said 'yes' it is more business-based. However, 21.9% of participants stated that it is NOT business-based. These results could be counterintuitive as social media is social and the core of a large and growing market. I evaluated this concept throughout my research, suggesting points for and against the theory of social media being more economically driven; it can only be implied that social media is becoming more commercially focused.

When I asked participants when they use social media, a staggering 68.8% said they use social media the most before bed according to Figure 3. I have yet to find out why people crave to use social media before bed. Could it be because they are done with all their daily tasks and commitments and finally have the time to use social media? The next most selected answer choice was 'In school' with 21.9% - this could be due to my sample of participants as they are all in the sixth form and have free lessons so they may be more able to use their mobile phones in school compared to younger students.
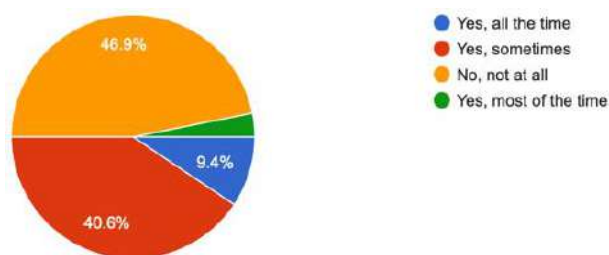
4.3. When Do You Use Social Media the Most?
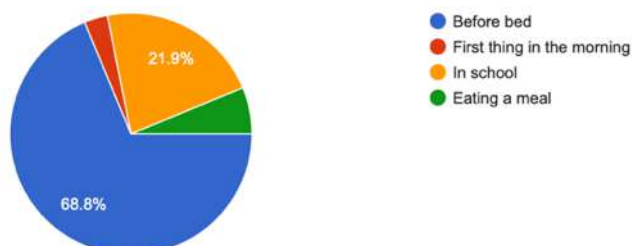
Figure 3: *Results from Question 3*
(Source: Author)

When I asked participants whether social media ever made them feel worse about themselves, 46.9% said no, not at all and 40.6% said sometimes, as you can see from Figure 4.

4.4. Has Social Media Ever Made You Feel Worse About Yourself? (Lower Your Self-Steam)

Figure 4: *Results from Question 4*
(Source: Author)

Almost all my respondents stated that social media does give them motivation and hopes for the future (Figure 5). This response is in contrast with the information by Akram (2018) as his article says that "The student's motivation level lessens because utilization of these long-range interpersonal communication locales; They depend on the virtual condition as opposed to increasing reasonable learning from this present reality." Perhaps the results are subjective, depending on each individual's social media accounts and on the accounts, they follow.

4.5. Has Social Media Ever Given You Hope and Optimism for Your Future? This Could Be A Future Job, Motivation to Study, Travel, Etc.
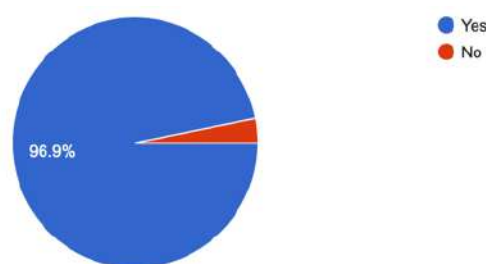
Figure 5: *Results from Question 5*
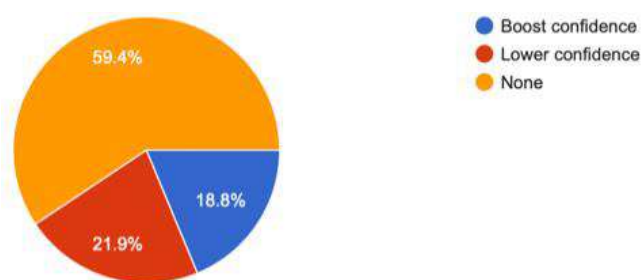*(Source: Author)*

The results in Figure 6 show that roughly 60% said that use of social media does not lower nor boost their confidence levels. This is contrary to the research of Steinsbekk et al. (2018). Additionally, approximately 20% of my participants stated that it boosts their confidence levels. This correlates with (Bayer et al. 2016), however, he found that the positive

effects only last for a short period. But, perhaps the individuals who selected this option of 'increased self-confidence' may have been active social media users (Steinsbekk and Wichstrøm, 2018). Around 20% of my respondents stated that social media lowers their overall confidence levels. This result was supported by the research of Burke et al. (2010). Overall, my findings are similar to Orben and Przybylski, (2019) and Utz and Breuer (2016), as there are only very slight correlations between social media and confidence levels/well-being according to the respondent's results.

4.6. Does Social Media Boost Your Self-Esteem (Confidence) Or Lower Your Confidence Levels?

Figure 6: *Results from Question*
(Source: Author)

Systematic reviews that examine older populations state that one in 10 studies find a null correlation, and the rest find a positive correlation between screen time and unfavorable psychological outcomes (Dennison et al., 2016). This shows an unclear the results in Table 1 show that most students (31.3%) estimate that they spend around 3-4 2-3 hours on social media daily, therefore, mirroring how they use social media impulsively and treat it like a necessity.

4.7. What was your average time spent on 'social' platforms last week (according to your screen time)?

The Average Range of Hours Spent on Social Media Per Day	Number of students
2-3	8
4-5	7
6-7	5
8-9	3
10+	3

Table 1: *Results For Question 7*
(Source: Author)

Screen time is the amount of time a user spends interacting with screens during a specific time frame (Orben and Przybylski, 2019). Table 1 shows that the majority of the participants spend 2-3 hours on social media per day. As you make your way down the table, the number of students decreases. This could be viewed positively due to less screen time or perceived negatively due to a lack of social interaction. However, if totaled (3 hours of social media per day for one week), that would add up to 21 hours per week.

4.8. Experiment Results

Table 2 and 3 show the results I gathered. These are the happiness scores before and after the experiment, using the online Pursuit of Happiness quiz (https://www.pursuit-of-happiness.org/science-of-happiness/happiness-quiz/) that gave a score out of 150 (150 being the highest). Since participants had to complete the same quiz twice, order effects could have occurred (the likelihood of participants getting better or bored when repeating the same task more than once) which means they would have lasting effects from the first time they completed the happiness quiz to the second, mainly because the time between completing the two quizzes was short (33 hours).

The fact that participants who consent to participate tend to be less reliant on social media or perhaps more self-actualized than students who refused to participate could decrease the reliability of this experiment. Moreover, since I asked participants individually to participate in the experiment, demand characteristics may have occurred. This is because I (the investigator) could have unconsciously spoken differently to participants (different tone of voice, smile more, etc.), which may have affected participants' behaviors thereby, changing their natural behavior.

Table 2: *Happiness Scores Before and After*

	Before	After
Average	68.1	79.3
Standard deviation	19.9	21.3
Minimum	29.0	32.0
Maximum	114	116

(Source: Authors' Own Illustration)

The standard deviation before the experiment was around 20, and after the experiment, it was approximately 21. Similarly, the minimum and maximum scores became larger after the experiment. The average, however, is was the most differentiated, with an

average of 68.1 before and 79.3 after. The average happiness score with the standard deviation as an error bar is shown in Figure 7.

Figure 7: *Happiness Scores Before and After with The Standard Deviation as An Error Bar (Source: Author)*

4.9. Statistical Analysis and t-Test

The average happiness score increased after 33 hours. However, after conducting a two-tail t-Test using a 95% confidence interval, the p-value was 0.00064, which is less than 0.05. This shows that there is a statistically significant difference between the two means.

Table 3: *Female Participants' Happiness Scores*

Before experiment	After experiment
53	44
67	57
47	48
82	92
61	71
83	89
45	89
76	97
95	96
74	87
89	116
50	68

80	71
114	115
87	77
74	84
79	85
79	85
58	45
113	101
54	92
71	98
49	57
50	48

(Source: Author)

4.10. Overview of Female Participants' Happiness Scores:

There were 24 female participants. The minimum happiness score within the female participants is 47 before the experiment and 44 after. Before the experiment was conducted, the highest happiness score was 114, and the highest after was 116. Female participants did score higher on the happiness quiz compared to male participants.

Table 1: *Male Participants' Happiness Scores*

Before experiment	After experiment
62	71
82	96
95	92
72	78
43	65
90	97
46	64
92	99
89	93
62	104
29	32
75	104

89	88
84	76

(Source: Author)

4.11. Overview of Male Participants' Happiness Scores:

There were 14 male participants. The lowest happiness score prior to the start of the experiment is 29, and after the experiment is 32. The highest happiness scores the experiment is 95, and after the experiment is 104. Male scores before and after were overall lower than female participant scores. However, since my male sample size is smaller than my female sample size, I cannot conclude that males are overall less happy compared to females.

All in all, the average happiness scores between males and females before the experiment are equal (72.1). The happiness scores after the experiment are both similar, with females receiving an approximate mean of 81 and around 83 for males.

I conducted another two-tail t-Test to compare the averages between male and female happiness scores after the experiment. Figure 8 ~~9~~ presents the average in a chart with error bars. I got a p value of 0.87460895 which is more than 0.05. Therefore, both male and female happiness scores increased to around the same extent.

Figure 8: *Average Happiness Scores After Experiment Comparison Between Males and Females*

(Source: Author)

5. Discussion

There are many ways to test participants' happiness levels that may be more accurate than a quiz. For example, looking at biological factors – taking saliva and urine samples from

participants and studying the changes in neurotransmitters and hormones. However, this was not feasible for me. Moreover, happiness can be measured by studying behavior (smiling with your eyes and learning with a Duchenne smile) (Sugay et al., 2022) this would have required observation which would be very time-consuming. Using a quiz may be unrepresentative of real-life happiness behaviors, therefore, lowering the ecological validity of my experiment and its explanation that a 33-hour social media deprivation would increase happiness levels.

Moreover, I trusted participants refrain from checking social media for 33 hours during the experiment. However, I could have activated participants' screen time to ensure they did not use any social media platforms during the 33-hours. Doing so may have increased my experiment's the internal validity but doing this would have also created an invasion of privacy. I could have asked for consent for doing so but gathering participants for this experiment was already quite challenging, so informing participants to activate their screen time may have made them even less willing to participate.

Furthermore, as I gathered participants, I noticed that males were less likely to participate. This may mirror males' dependence on social apps, including online video games. The four participants who withdrew were males. Perhaps females are more aware of issues caused due to excess social media use and hence are more self-actualized and determined to use it less often.

Since 27out of the 38 (71%) of the participants had an increase in happiness scores, result was confirmed by a study conducted by Hoare (2016). However, 29% of participants had their happiness scores decreased, correlating with Carson et al.–(2016). It also relates to Verduyn et al. (2017) who hypothesized that an increase in screen time boosts well-being. Similarly, Dienlin et al. (2017) concluded that those who use social media frequently as a source of communication are more satisfied with their lives. However, there is a lack of studies that evaluate the effects of prohibiting social media on well-being over a long time (Dienlin et al., 2017). Those investigations would be practical when studying well-being because wellness includes many things other than positive and negative effects, such as life satisfaction (Diener et al., 1999). Perhaps increasing the duration of social media deprivation could have created a much more significant increase in happiness levels.

6. Conclusion

In conclusion, the experiment has shown that social media can negatively impact teenagers' happiness levels and, consequently, teenagers' well-being to a certain extent. 34.4%

of the questionnaire participants stated that social media had had a daily impact on their procrastination levels with a score of 4 or 5. This reflects the negative consequences of using social media extensively. Additionally, 68.8% of my participants stated that they most use social media before bed. This is a drawback as social media has been positively associated with disturbed sleep (Levenson et al., 2017). In a study on 1,763 US young adults (aged 19-32) those who checked social media 30 minutes before bed had increased sleep disturbance (adjusted odds ratio of 95% confidence interval=1.31-2.34) (Levenson et al., 2017). Moreover, if the hours of social media used per day, by my questionnaire respondents, were to be totaled (3 hours of social media per day for seven days), it would add up to 21 hours of social media per week – this is nearly an entire day of each week consumed by social media usage.

Both, male and female teenagers became happier after the experiment to around the same extent. Therefore, there was no significant difference between the happiness score of males and females after they restrained from social media for 33 hours.

Altogether, social media can bring entertainment, escapism, connection, and information. However, its consumption can inevitably cause demotivation through self-comparisons and so create a change in our overall happiness levels. It has the ability to allow you to connect with loved ones around the world and actively enhance our society in many ways. Unfortunately, it has been proven that social media can cause destructive effects on teenagers' well-being, which can impact their daily performance.

In conclusion, social media negatively impacts teenagers' happiness and well-being meaning that social media users should treat social media with extreme caution.

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