

AMENDED Exhibit 230

PLAINTIFFS' OMNIBUS OPPOSITION TO DEFENDANTS' MOTIONS FOR SUMMARY JUDGMENT

Case No.: 4:22-md-03047-YGR

MDL No. 3047

In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation

“Addiction” to Facebook: A Literature Review

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v.0.1, October 3, 2017

TL;DR

- Use of Facebook that interferes with regular life, or amounts of Facebook use that exceed a person's desires/intent may indicate an addiction.
- Between 1-10% of college students exhibit a high degree of Facebook addiction, while an inclusive total of ~20-30% exhibit problematic symptoms. Rates of addiction in the broader population are unknown but probably somewhat lower.
- People who are addicted to Facebook are more likely to be lonely, have lower well-being, have difficulties managing their emotions, and spend more time on (and be at greater risk of addiction to) other kinds of technology as well.
- Use of Facebook is more likely to lower well-being of people who use Facebook passively, spend a lot of time on Facebook, experience envy when on Facebook, or feel that using Facebook is not a meaningful use of their time.

Addiction to Facebook: what does it mean?

Since Facebook itself is relatively new, attempts to understand addiction to Facebook are likewise nascent. Most researchers adapt features from drug addiction, alcohol abuse (e.g., Holmes et al., 2014), or mental illness (e.g., Tang et al., 2016) to understand addiction to Facebook (Andreassen et al., 2012). Some relevant features include:

- Interference with responsibilities at work, school, or home
- Use is greater/longer than intended
- Failed attempts to reduce usage
- Social, work, or recreational activities are forsaken
- Use to escape problems or relieve negative moods
- Mental preoccupation with past usage and upcoming usage

Summary: Use of Facebook that interferes with regular life, or amounts of Facebook use that exceed a person's desires/intent may indicate an addiction.

Limitations/Notes:

- Whether these kinds of features in the context of Facebook (or other technology, including generic Internet use or video game playing) should be considered a true addiction or “mere abuse,” is an open question (Griffiths, 2013).
- I'll use “addiction” as a brief term for this spectrum of problematic use of Facebook, but it's not clear that addiction is the correct term. We may want to adopt a more generic term going forward.

How many people does this affect?

Researchers often adapt methods used to measure substance abuse or mental illness to Facebook, as noted above, and arrive at somewhat different estimates depending on their chosen method. In a study of Taiwanese college students (Tang et al., 2016), researchers quantified a 0-100 Facebook Addiction score based on survey questions and diagnostic thresholds adapted directly from Obsessive-Compulsive Disorder. Using those thresholds, 1% were classified as addicted to Facebook (≥ 80) and 18.5% were given an above-normal “alert” classification (50-79). The remaining people (80.4%) were classified as within the normal range (< 50). In a convenience sample of young adult Polish Facebook users ($N = 381$, Mean age = 20.7) researchers measured Facebook addiction using the Bergen Facebook Addiction Scale. They found that 32% were high on the addiction scale (Blachnio, Przepiorka, and Pantic, 2016). In Holmes et al., 2014, 9.7% of undergraduates surveyed at a U.S. university were classified as “disordered” in their use of Facebook based on adaptation of measures used from alcohol dependence. In a study of Turkish undergraduates (Bacı and Gölcü, 2013), 5.1% were classified as addicts and 22.6% were classified as at-risk for addiction.

Summary: Between 1- 10% of college students likely exhibit a serious degree of Facebook addiction, while an inclusive total of ~20-30% exhibit problematic symptoms.

Limitations/Notes:

- These rates likely encompass a combination of addiction, abuse, and problematic use of Facebook, rather than a strict and precise threshold for addiction.
- Most of the studies of addiction to Facebook are of college students or college-aged people, partly because researchers suspect that risk of addiction is higher amongst young people (Griffiths, 2013). Estimated rates of addiction in other populations is unknown, and likely lower in the population as a whole.

What factors predict whether someone is addicted?

A meta-analysis of Facebook usage and loneliness (Song et al., 2014) finds correlations between compulsive use of Facebook and loneliness in the range of r 's = ~0.2-0.4, indicating that loneliness is may be a predictor of addiction. Hong et al. (2014) finds that addiction to Facebook is most strongly related to amount of Facebook usage, a sense of self-inferiority, and "depressive character." In the Polish study described above (Błachnio, Przepiorka, and Pantic, 2016), the 32% of people in the high addiction group had lower self-esteem and lower well-being than those with low scores on the addiction scale.

Disordered use of Facebook has also been associated with higher scores for internet addiction and greater difficulties with emotion regulation, including several significant emotion regulation sub-scale results: non-acceptance of emotional responses, limited emotion regulation strategies, difficulty controlling impulses and difficulty engaging in goal-directed behavior. Disordered vs. non-disordered users reported spending 50% more time on Facebook (76 vs. 45 minutes per day), and approximately 50% more time on the internet per day (223 vs. 144 minutes per day; Holmes et al. 2014). These results underscore the fact that people who are addicted to Facebook may also be addicted to other forms of technology (spending twice as much time online but not on Facebook each day), and exhibit a constellation of psychological symptoms.

In developing the Bergen Facebook Addiction Scale (BFAS; Andreassen et al., 2012), researchers found that higher scores were correlated with higher extraversion, higher neuroticism, and lower conscientiousness.

Researchers have also found that feelings of withdrawal (negative reinforcement) rather than need for mood alteration (positive reinforcement) is the primary predictor of compulsive Facebook use (Cheung, Lee, and Lee, 2013). The same study finds that a preference for online relationships also predicts compulsive use (though feelings of withdrawal is >3X as predictive). Feelings of withdrawal, the primary predictor of compulsive use, were measured as agreement with the statements: "I miss being on Facebook if I can't get on it." "I am preoccupied with Facebook if I cannot log on for some time." "When not on Facebook, I wonder what is happening there."

Summary: people who are addicted to Facebook are more likely to be lonely, have lower well-being, have difficulties managing their emotions, be preoccupied with Facebook when not on it, and spend more time on and be at greater risk of addiction to other kinds of technology.

What about people who are negatively affected by using Facebook, but may not be addicted?

Another way to think about this problem space is in terms of who appears to experience lowered well-being as a result of Facebook.

In a random assignment experiment on Danish Facebook users (Tromholt, 2016), people were randomly assigned to use Facebook normally or to quit it for 1 week. People in the "quit Facebook" condition showed a significant increase in well-being compared to the control group, but the change was quantitatively driven by a subset of users. Well-being rose after quitting Facebook if they often used Facebook passively, experienced envy on Facebook, or were a medium or heavy user of Facebook. Therefore, passive (vs. active) use, experiences of envy on Facebook, and greater total amount Facebook usage may increase the odds that Facebook is having a harmful effect on a given person's well-being. The negative effects of passive use replicate an earlier experimental study (Verduyn et al., 2015).

In Sagioglou & Greitemeyer (2014), participants were randomly assigned to use Facebook or to one of two control conditions. Participants in the Facebook condition experienced a deterioration of mood, but this effect was mediated by a feeling of not having done anything meaningful. Therefore, negative effects on well-being may also be indicated by a feeling that time spent on Facebook is not meaningful.

Summary: Using Facebook may lower well-being if people use Facebook passively, spend a lot of time on Facebook, experience envy when on Facebook, or feel that time on Facebook is not a meaningful use of their time.

Do we know what causes Facebook addiction? Or what the consequences of Facebook addiction are?

No. Causes and consequences of Facebook addiction are not well-understood. Almost all studies of addiction to Facebook are non-experimental (Byun et al., 2009), so causal inferences are difficult. Moreover, people who are addicted to Facebook exhibit a wide range of other life challenges and high engagement with technology beyond Facebook, demonstrating that addiction to Facebook may itself be a symptom of broader difficulties, and be deeply connected to other patterns of technology addiction. Still, there is reason to think that Facebook itself can be harmful for addicted users: experimentally quitting Facebook appears to be specifically beneficial for intensive users' well-being (Tromholt, 2016).

FAQ

Are X% of people truly addicted to Facebook?

We don't know, but possibly not. Facebook isn't addicting in the same way as drugs/alcohol (which create a chemical dependency in the brain), but it could be addicting in ways similar to gambling or other compulsive behavior. But even on that basis, the rate of true addiction may be a bit lower than the estimates suggest. Rates of addiction are calculated by applying scales developed for other purposes. For example, in one of the studies above, researchers directly adapt a diagnostic scale for obsessive-compulsive disorder and use the same thresholds to diagnose Facebook addiction (with scores over 80 on a 100 point scale indicating addiction to Facebook, just as it indicates pathological compulsions for OCD). That's a perfectly reasonable approach, but we don't know if 80/100 indicates compulsive usage that's actually as severe as OCD compulsions; I'm guessing it isn't (but the truth is, we don't know). Likewise, matched intensity on an addiction scale developed for alcohol doesn't necessarily indicate an equally severe addiction to Facebook. What these results do show is that a substantial fraction of people, perhaps 30% of college students, exhibit many of the symptoms of addiction / compulsion.

Are algorithms to blame?

Research hasn't addressed this. If algorithms favor content or functionality that encourages people to spend more time on Facebook, then it's possible that this will by its nature tap into addictive mechanisms. The result could be to make addictive/compulsive usage more severe and more widespread. But none of the above studies have examined this in any way.

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