From: David Ginsberg </O=THEFACEBOOK/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=GINSBERGE41>
To: Elena Davis; Anja [redacted]; Lauren [redacted]
Sent: 8/29/2018 8:46:46 PM
Subject: RE: Youth Hot Buttons

Tennessee v. Meta
Case No. 23-1364-IV

DX0460

Thank you!!!

From: Elena Davis
Sent: Wednesday, August 29, 2018 8:10 PM
To: David Ginsberg [redacted]@fb.com>; Anja [redacted]@fb.com>; Lauren [redacted]
[redacted]@fb.com>
Subject: Re: Youth Hot Buttons

Hello all,

As a follow up to Anja's points, I think it would be efficient to have many of same studies in your back pockets for speaking to the addiction narrative as well as well-being more broadly. Problematic use behaviors are most prevalent in youth, who have greater vulnerability to difficulties with self-regulation due to the still-developing prefrontal cortex, but similar vulnerabilities in self-regulation can exist across the lifespan. The claims that social media is rewarding and therefore addictive are debunked by the neuroscience literature on how addictive processes unfold in the brain, and any negative impacts would be quite small. See below.

The following excerpts from the UNICEF review are relevant to the addiction narrative:

> "Media reports sometimes claim that internet use and new technology can 're-wire' children's brains and make them addicted (e.g. Ferranti, 2016). However, while some behaviours may certainly change brain structure and its function, this cannot, in itself, be taken as evidence for the development of addiction, nor can it even be considered a harmful outcome per se. Brain changes are part of a normal development process, in particular during adolescence (Blakemore and Mills, 2014). Changes in brain structure, as measured by magnetic resonance imaging (MRI) studies, seem to be subject to strong genetic control between late childhood and adolescence and are thus unlikely to be affected in any major way by subtle environmental influences such as technology (Mills, 2014). **As Mills (2014) concludes in a recent review of the neuroscience literature on the effects of internet use on the adolescent brain, "Major brain changes, akin to what is suggested by the phrase 'rewiring the brain' are unlikely"** (p. 385). "
>
> "Another popular claim sometimes found in media reports (e.g. Ferranti, 2016; Kardaras, 2016), which draw on neuroscience literature though do not necessarily reflect the body of evidence accurately, is that internet can 'hijack the brain' by interfering with its reward system to the point where a behaviour becomes encoded as habit. ... Release of dopamine is not problematic in itself, but a natural function that serves many important roles in normal brain functioning, such as influencing attention, working memory, motivational salience and fluent motor function. From a logical standpoint, if using digital technology could hijack the brain (or the dopamine system) and cause addiction, simply by being pleasurable, it stands to reason that most people would be addicted to it. This is clearly not the case, suggesting that dopamine release and feelings of reward alone do not cause addiction. This is supported by recent thinking in the neuroscience literature on substance addiction, as only a minority of drug users develop addiction (Nutt et al., 2015). **To conclude, the neurobiological mechanisms that may contribute to excessive use of digital technology are, so far, largely unknown. However, it is unlikely that digital technology can cause addiction by directly impacting the brain. Furthermore, claims that the brain might be hijacked or re-wired by digital technology are not supported by neuroscience evidence and should be treated with skepticism.**"

Also attached is a brief critique of the research field on "Facebook addiction" by Mark Griffiths. Basically it is unclear what would be "driving" a Facebook-related addiction, and we need to understand more specifically what

behaviors people are having trouble regulating. Those behaviors (e.g., seeking social approval) may be playing out on Facebook, but are not unique to Facebook. Factors external to Facebook itself could be contributing to the problems.

> "Just like the term 'Internet addiction', **the term 'Facebook addiction' may already be obsolete because there are many activities that a person can engage in on the Facebook website** (e.g., messaging friends, playing games like Farmville, and gambling)… **there is a fundamental difference between addictions *to* the Internet and addictions *on* the Internet**."

Finally, the work of Andy Przybylski that Anja referenced is also relevant. (He had the quote about the effect of social media use on adolescent depression as being the same size effect as eating potatoes.) He also conducted youth survey research showing that moderate technology use is not harmful and is in fact associated with highest well-being. Both abstinence from tech use and high use were associated with lower well-being, but in such a survey there is no conclusion of causality - so other factors may be contributing to both high social media use and low well-being, or low well-being could be causing the higher tech use. And even among high use, the negative effects are small: "Even at exceptional levels, we're talking about a very small impact. It's about a third as bad as [the effect on well-being of] missing breakfast or not getting eight hours' sleep."

I wish there were more conclusive studies about Facebook addiction, but as the concept itself is so controversial and variable in its definition, there isn't a gold standard to reference.

Looking forward to discussing more,
Elena

From: David Ginsberg <[redacted]@fb.com>
Date: Wednesday, August 29, 2018 at 7:00 AM
To: Anja [redacted]@fb.com>, Lauren [redacted]@fb.com>
Cc: Elena Davis <[redacted]@fb.com>
Subject: RE: Youth Hot Buttons

Thank you! Will follow up with questions. This is great!

From: Anja [redacted]
Sent: Tuesday, August 28, 2018 5:37 PM
To: Lauren [redacted]@fb.com>; David Ginsberg [redacted]@fb.com>
Cc: Elena Davis <[redacted]@fb.com>
Subject: Youth Hot Buttons

I wanted to send you a few new reports, and some commentary that may be insightful attached.

1. Hopelab Report: Digital Health Practices, Social Media Use, and Mental Well-Being Among Teens and Young Adults in the U.S.
    a. No correlation between reported frequency of social media use and reported depressive symptoms among teens and young adults.
    b. Many young people describe actively curating their social media feeds and self-regulating their social media use in order to maximize positive and minimize negative effects. Every individual responds differently to social media when they are feeling poorly. Many survey participants exhibit a high degree of self-awareness about the impact social media has on them during those times. Many young people seem to curate their social media feeds to make sure they are being exposed to helpful and positive content. Teens and young adults who say social media usually makes them feel better report being exposed to funny or inspirational content.
    c. Do teens and young adults with and without current symptoms of depression report using social media in different ways, such as actively vs. passively? This survey did not find a statistically significant association between depressive symptoms and whether respondents reported engaging in more

"active" or "passive" behaviors on social media.

   d. Do teens and young adults with depressive symptoms report feeling better, or worse – more connected, or more alone – when using social media? They are slightly more likely to say that using social media during these periods makes them feel better (30%) than they are to say it makes them feel worse (22%).
   e. And how do young people say they use social media when they notice they are feeling anxious, stressed, or depressed? Are there patterns in how they describe using social media at these times? For young people with moderate to severe depressive symptoms, social media may be more important than for youth without depressive symptoms when it comes to feeling less alone, finding inspiration, and providing a venue for creative self-expression.

2. ABCD Study: Findings from large scale studies to at least argue that it's more complicated than Twenge has made it seem. See here for a large scale study finding that social media has basically "the exact same effect on depression as eating potatoes". New research from the ABCD Study (Adolescent Brain Cognitive Development Study) finds that social media may be associated with positive benefits for younger kids.
3. UNICEF Literature Review: You know that one already, but doesn't hurt to have in your backpocket.
4. It all comes down to HOW teens are using social media. Teens self-report social media use as predominantly positive. Whether or not they feel good about their use is related to the directionality along four functional dimensions:
   a. Relational interactions can lead to both closeness or disconnection
   b. Self-expression can lead to both affirmation or getting judged
   c. Interest-driven exploration can lead to both inspiration or distress
   d. Browsing leads to both entertainment or boredom, admiration or envy

A clarification from our earlier meeting: I mentioned that suicide has declined – that is the case for Europe, not the US. Suicide has declined slightly among youth worldwide since 1990. It has increased in the US starting in 2007. Social media use doesn't explain the increase in suicides among youth (see attached depression rebuttal article) and there are arguments that the US increase is related to income inequity and a lack of a safety net when compared to Europe's drastic decreases.

Anja