

Plaintiff's Exhibit Markers	
PLAINTIFF	United States District Court Northern District of California
	Case No. <u>MDL No. 3047 (N.D. Cal.)</u>
	Case Title <u>In re: Social Media Adolescent Addiction</u>
	Exhibit No. <u>4175</u>
	Date Entered _____
Mark Busby, Clerk Deputy Clerk	

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appearance. A person can be dissatisfied with their appearance but not be concerned about it.

To learn more about how body image is measured (and for additional definitions), check out our previous note on defining body image.

In the sections that follow, dots (●) beside numbered references indicates research that is longitudinal or experimental, while triangles (▲) indicate meta-analyses.

Why should we care?

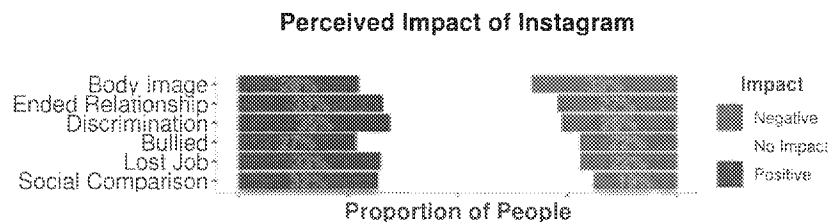
Body image issues are common. While estimates vary, several sources point towards body image issues being a normative concern. In an international off-platform YouGov survey, 15% of people reported body dislike (18% among women and 11% among men) [1]. A recent on-platform Instagram survey found that 53% of users experienced frequent body dislike (60% among women and 46% among men) [2]. External surveys have estimated the prevalence of body dissatisfaction at around 13–32% of U.S. women and 9–28% of U.S. men [3].

In the US, prevalence estimates of anorexia, bulimia, and binge-eating are 0.9%, 1.5%, and 3.5% among women, and 0.3%, 0.5% and 2.0% among men in the US [4]. For body dysmorphia, it is 2.4% (2.5% among women and 2.2% among men) [5].

Body dissatisfaction is linked to several physical and mental health problems. Body dissatisfaction can lead to eating disorders (e.g., anorexia, bulimia, and binge eating), mood disorders (e.g., depression), unhealthy weight control behaviors, and lower self-esteem [●6,▲7,●8,●9,●10].

The media is generally blamed for poor body image. In a majority of prior work, the media, primarily TV and magazines, has typically been considered the “most influential and pervasive cause” [▲11]. Meta-analyses and experiments confirmed a link between media exposure and subsequent body dissatisfaction among women, though this association is likely stronger for vulnerable subpopulations [▲12,▲13,▲14,●15]. The relationship for men is less clear. There is also growing evidence of Instagram’s and Facebook’s potential negative impact (see below, as well as [▲11,▲16]).

People perceive that their Instagram and Facebook use contributes to their body image issues. In the YouGov survey, 33% of Instagram users perceived that Instagram had a negative impact on their body image. They perceived body image as the problem that Instagram worsened the most, more than when they end a relationship or lose a job. By contrast, 11% of Facebook users perceived that Facebook had a negative impact on their body image (ranked 10th out of 22).



Among 22 potential well-being correlates that were surveyed on, Instagram users were most likely to perceive Instagram as having a negative impact on body image. (Only the top 6 are shown here for space.)

People who use social media may be particularly vulnerable to negative outcomes. Self-objectification (i.e., viewing oneself as an object for use, typically for visual pleasure) is associated with more frequent Instagram and Facebook use [17,18,19], and it can lead to body dissatisfaction [▲20,●21].

What causes it?

Two primary factors lead to body dissatisfaction:

Pressure to conform to body ideals. Various research has connected pressure from others (e.g., being thin for women and being muscular for men) to subsequent body dissatisfaction [●22,●23]. This pressure can originate from the media (including social media), peers, parents, as well as significant others.

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Research suggests two mechanisms that mediate the relationship between this pressure and body dissatisfaction: the **internalization** of body ideals (e.g., thin or muscular) and **appearance comparison** [●24; ●25]. Among women, **self-objectification** also mediates this relationship [▲20,●21].

Being overweight. Studies have also connected obesity and high body-mass index (BMI) with subsequent body dissatisfaction [●26]. In particular, early-onset obesity is a strong predictor of body dissatisfaction, likely due to the impact of being teased about one's weight [27]. Obesity may be a contributing factor also because (Western) society favors thinness [28].

Other factors such as negative affectivity (i.e., a propensity to become emotionally distressed) and dieting may also contribute to body dissatisfaction [●29,▲30], though evidence is limited.

Who experiences it?

Women experience more body dissatisfaction than men. Women experience more body dissatisfaction and feel less positively about their body compared to men [●31, 32]. In the YouGov survey previously mentioned, 18% of women reported body dislike, compared to 11% of men; the on-platform Instagram survey found that 60% of women reported body dislike, compared to 46% of men. Other work found that by adolescence, 63% of girls are trying to lose weight, compared to 16% of boys [33].

Several factors may explain the gender difference. Women may be affected more than men by cultural norms of physical attractiveness [34; 35; ●31]; relatedly, the relationship between exposure to media and body dissatisfaction is stronger among women than for men [▲36]. The relationship between self-esteem and body image is also stronger among women than men [37]. Lower appearance satisfaction among women than men may also arise because a woman's appearance may be more important from an evolutionary perspective [34].

Body dissatisfaction affects both teens and adults. Body dissatisfaction also tends to persist over one's life, among both men and women [34; 38]. Internal research is mixed: the YouGov survey found that adults were slightly more likely to report body dislike than teens (16% vs. 14%), while the on-platform Instagram survey found prevalence of body image higher among teen girls than women (66% vs. 60%). Nonetheless, a focus on younger people may be warranted: while older women were as dissatisfied as younger women with their bodies, they were less concerned [39]; correlates such as self-objectification and disordered eating may also be more prevalent among younger women [40].

Body dissatisfaction may be greater in East Asia. One study found that Korean girls and boys reported more body dissatisfaction than American girls and boys [41], while another found that women in Korea and China experienced greater body dissatisfaction than those in the US [▲42]. The adoption of Western standards of beauty may partially explain these differences [▲43].

Other vulnerable subpopulations. People who have pre-existing body image issues (e.g., greater body dissatisfaction, body concern) or who internalize thin ideals to a greater degree tend to be affected more by media exposure [▲36,44,●45]. People who compared themselves to others more were also more likely to report worse body image [●46,●47,●25].

What is Instagram's and Facebook's impact?

Overall, there is substantial evidence to suggest that Instagram and Facebook use can increase body dissatisfaction.

Overall use. Several studies point towards overall social media use increasing body dissatisfaction. A longitudinal study of a Dutch social network involving adolescents found that more frequent use led to increased body dissatisfaction; on the other hand, increased body dissatisfaction did not lead to more frequent social media use [●48]. In an experiment, women who were assigned to spend time on Facebook reported greater shape and weight concern compared to a control website [●49]. A similar experiment found that women who were assigned to spend 10 minutes on Facebook reported more body concern compared to those assigned to spend 10 minutes on a control website, but only if they were high in appearance comparison tendency [●50].

Still, other research suggests that time spent on photo-based activities rather than overall site use is the cause of the overall effect [51, 17]. **Viewing attractive images** may be particularly problematic - several experiments have demonstrated that women who were exposed to Instagram photos of attractive models reported increased body dissatisfaction [●52]. In one experiment, when people were assigned to view appearance-focused Instagram profiles for a

week, body dissatisfaction increased for women (and also men, though the difference was not significant) [●53].

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Left: In a recent focus group study, Kylie Jenner was commonly called out as a negative influence on body image. Right: Examples of #fitspiration posts, which typically promote exercise and dieting, typically for the goal of attaining an ideal body.

Selfies and filters. An experiment found that taking and posting a selfie on Instagram or Facebook caused worse mood and body image among women compared to a control group that browsed a travel website [●54]. Women exposed to enhancement-free images also reported lower facial dissatisfaction than those exposed to standard Instagram images [●55]. A cross-sectional study similarly found that girls who uploaded selfies tended to report more body dissatisfaction, and that those who spent more effort editing these photos reported even more body-related and eating concerns [56]. One experiment not only found that adolescent girls exposed to edited selfies reported worse body image than those exposed to unedited selfies, but also that there were no differences in how much edited or unedited images were perceived as “a representative view of reality” [●47]. (See this post by Liz Southwood for examples of filters and the policies that are currently in place to allow (or disallow) their use.)

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Examples of filters and the policies that are currently in place to allow (or disallow) their use.

Hashtags. Some hashtags may also be more problematic than others. Women who were exposed to #fitspo (i.e., fitspiration, which promotes exercise and dieting, typically for the goal of attaining an ideal body) images on Instagram reduced self-compassion, while exposure to #loveyourself images resulted in more positive body image [●57]. A cross-sectional study found that men who viewed more “fitspiration” content reported greater body dissatisfaction [58]. Hashtags such as “#nomakeup” can also undo the positive benefit of seeing enhancement-free images [●55].

Like and comments. Viewing images with a large number of likes led to reduced facial dissatisfaction; people who placed more importance on likes were also more likely to report more

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body dissatisfaction [●59]. (Relatedly, some of our internal work also demonstrated an association between seeing content with many likes (or comments) and increased social comparison [60].) Another study found that people with a “negative feedback-seeking style” who received a high number of comments on Facebook were more likely to later report disordered eating concerns [●61].

Other associations.

- Viewing attractive profiles - people reported greater body dissatisfaction after being exposed to the Facebook profiles of attractive users [●62].
- Seeing positive appearance comments - seeing such comments (e.g., “you look great!”) on Instagram photos can lead to greater body dissatisfaction [●63].

These findings on the effects of social media, interpreted alongside the broader literature, suggest that social media use can lead to greater body dissatisfaction, but that certain populations are likely more affected than others. These effects may be bidirectional. For instance, appearance comparison (the tendency to compare one’s physical appearance) can lead to internalization of media ideals, which in turn leads to even more appearance comparison [●64]. Another longitudinal study found that the internalization of appearance ideals led to increased surveillance of attractive peers on Facebook, which in turn predicted self-objectification and increased body concern [●65].

While indicative, many previous studies tend to be correlational, small-scale, and reliant on self-reported social media use; experimental studies may not reflect typical social media use. And as a majority of studies focus on younger women, less is known about effects on men or older adults. More research is needed to identify the specific social media behaviors associated with worse body image, how social media’s effects vary by demographic, as well as understand the situations where use may improve body image.

What can we do about it?

Based on prior work, what are potential interventions that may work?

Alter the types of content that people see. Here are several ways that the type of content presented on social media can be altered to reduce body dissatisfaction. However, many of these suggestions come with caveats:

- **Show more body-positive Instagram posts.** Having a more positive body image can protect against body dissatisfaction [66]. In an experiment, women were exposed to body-positive Instagram posts reported increased body satisfaction and appreciation [●67]. In fact, such body-positive content already exists on Instagram and exemplifies “core theoretical components of positive body image” [68]. Still, this comes with a caveat - exposure to these posts also led to increases in self-objectification [●67].
- **Show average-sized or larger models,** as opposed to thinner models. For example, exposure to average-sized models led to better body image, and were rated as equally effective or appealing for advertising, compared to thin models [●69]. Still, viewing larger models can also lead to increases in restricted eating [●70].
- **Show posts that focus on body functionality** (e.g., health and internal processes) over body appearance. In experiments where people took part in multi-week body functionality programs, body image improved (●Alleva, et al. 2015). On the other hand, experiments have shown that exposure to “body-as-process” images can produce even greater dissatisfaction (●Mulgrew & Tiggemann 2018, ●69).
- **Show posts that promote body acceptance** (e.g., inspirational quotes). In an experiment, women preferred body acceptance images and messages the most, followed by athletic, curvy, and then thin-ideal messages [●70]. Further, the body acceptance condition was also the only condition which did not increase self-objectification. Exposure to #loveyourself quotes on Instagram also increased people’s self-compassion [●57].
- **Show more humorous content.** Women who were shown parody images of Instagram celebrity posts reported increased body satisfaction and positive mood, compared to those shown the original celebrity posts they were based on [●71].
- **Show non-body/appearance-related content.** The control condition in many studies was travel images, suggesting that travel images create less body dissatisfaction.

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Nonetheless, travel may be a major source of social comparison on social media [72]. Instead, images of nature may be better - an experiment found that nature scenery increased women's body appreciation [73].

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Left: Examples of #bodypositive posts on Instagram. Right: Examples of #loveyourselfquotes posts on Instagram.

Show more close friend content. A correlational study found that the link between Facebook use and body image concerns was stronger when comparing oneself to acquaintances and celebrities than to close friends [74]. In fact, images of attractive unknown peers have similar negative effects to images of attractive celebrities [75]. At the same time, selfies posted by peers were judged more negatively than selfies posted by celebrities [76].

Discourage filter use and encourage the sharing of unfiltered images. As previously noted, viewing unedited images resulted in less body dissatisfaction than viewing standard Instagram images. However, this effect is cancelled out by including a hashtag such as #nomakeup or #noedit [55]. In some sense, this illustrates the difficulty of creating a different sharing norm on Instagram, as someone who uploads an unedited photo would likely want to indicate to others in some way that the photo looks "worse" because it is unedited.

Reduce negative comments from others. People who received negative comments in response to personally-revealing status updates were more likely to report disordered eating concerns four weeks later [61].

Make positive appearance comments on others' posts less salient. While positive appearance comments (i.e., "you look great") are likely intended as helpful and supportive, seeing these comments on others' posts increases body dissatisfaction [63].

Showing PSAs. In an experiment where some participants were shown a message reminding them that social media is a highlight reel prior to browsing Instagram, post-browsing negative affect was reduced compared to when no message was shown, but only for people who also reported more negative comparison [77].

Promote media literacy. Experiments have found that providing people with educational material on media literacy (e.g., knowing that what you see isn't necessarily real) can decrease body dissatisfaction [78] and social comparison [79]. However, the long-term efficacy of such interventions is less known [80].

Hiding or capping like and comment counts. Prior research also suggests that Project Daisy may reduce body dissatisfaction. As mentioned previously, work has demonstrated a causal link between viewing content with a large number of likes and subsequent body dissatisfaction [59], and a cross-sectional association between viewing content with a large number of likes or comments and social comparison [60].

Other suggestions. Here, we list suggestions and recommendations made in previous research, but that are not necessarily backed by any specific findings:

- **Campaigns** - campaigns directed at young adult women are more likely to be effective if women who previously suffered from eating disorders are chosen as spokespersons [81].

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- **Behind the scenes** - encourage people to post before/after photos of themselves with/without makeup [82]
- **NUX** - include a disclosure when opening an Instagram account that reminds viewers that images on Instagram are often edited [47]
- **Take a break** - some work concluded that the best thing to do is to reduce social media use and screen time, given the difficulty of limiting exposure to body dissatisfaction-inducing content [46]

Which interventions are unlikely to work?

- Showing labels or disclaimers on images is particularly ineffective, as they end up directing visual attention to the model's body. In some experiments, labels had no effect on body image [83], and in others, increased appearance comparison and body dissatisfaction [84]. (And as above, adding hashtags indicating that an image is enhancement-free cancels out any benefits from viewing such images.)
- Displaying body-positive captions on images increases body appreciation when images are of averaged-sized women, but can decrease body appreciation when images are of thin women [52].
- Encouraging people to compliment each other's appearances may improve mood, but also leads to increased body shame [85].

Overall, prior research suggests that solutions to body image issues are rarely one-size-fits-all. While some interventions are more likely to benefit everyone (e.g., inspirational quotes), others may only benefit certain subpopulations (e.g., PSAs may only benefit people who engage in more social comparison) or potentially harm others (e.g., larger-sized models may make restricted eaters feel worse about themselves if they perceived that they were similar to the models). People may sometimes prefer interventions that have worse outcomes (e.g., athletic-ideal may be preferred to thin-ideal images, but the former causes more body dissatisfaction). Interventions may also be double-edged (e.g., decreasing body dissatisfaction but increasing self-objectification). Finally, the relative effectiveness of these different interventions also remains unknown.

The Instagram Mental Health team is working to better understand social comparison and body image, especially among teenage girls. To better understand the specific concerns that our users have, we have conducted qualitative deep dives with teen girls who report experiencing these problems in the United States and are planning similar work in South Korea where body dissatisfaction among teen girls may be worse. We are also planning to launch on-platform surveys, and subsequently combine survey and behavioral data to understand common triggers, surfaces most commonly associated with negative comparisons and body image issues and behaviors that correlate with it. This research will inform the interventions that the team is developing and testing. Do reach out to the team if you're interested in learning more!

Notes and References

1. In fall 2019, the Facebook Well-Being Team (POC: J [REDACTED] J [REDACTED]) ran an international off-platform survey using YouGov on aspects of well-being, including the prevalence of 22 behaviors and experiences correlated with well-being (including body dislike). The body dislike prevalence estimates represent the proportion of people who endorsed having the following experience within the last month: "disliked the way your body looked so much that it got in the way of your ability to concentrate or enjoy activities." We also asked about perceived impact of Facebook or Instagram on each of these behaviors and experiences: "Overall what impact, if any, did [Facebook/Instagram] have on this experience?" ranging from very positive to very negative impact.
2. The varying prevalence estimates may be due to differences in how the questions were asked. For example, the YouGov survey asked about body dislike that created interference in concentration/daily activities, while the on-platform Instagram survey asked about frequent body dislike.
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This note summarizes this living document, where we're collecting research (both internal and external) related to body image. Contributions are welcome!

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