

# Mitigating Harms of Social Media for Adolescent Body Image and Eating Disorders: A Review

Suzanne E Mazzeo<sup>1,2</sup>, Madison Weinstock<sup>1</sup>, Taylor Nadine Vashro<sup>1,\*</sup>, Taryn Henning<sup>1,\*</sup>, Karly Derrigo<sup>1</sup>

<sup>1</sup>Department of Psychology, Virginia Commonwealth University, Richmond, VA, USA; <sup>2</sup>Department of Pediatrics, Virginia Commonwealth University, Richmond, VA, USA

\*These authors contributed equally to this work

Correspondence: Suzanne E Mazzeo, Virginia Commonwealth University, 806 W. Franklin St, 842018, Richmond, VA, 23284-2018, USA, Email semazzeo@vcu.edu

**Abstract:** Social media has negative effects on adolescent body image and disordered eating behaviors, yet adolescents are unlikely to discontinue engaging with these platforms. Thus, it is important to identify strategies that can reduce the harms of social media on adolescent mental health. This article reviews research on social media and adolescent body image, and discusses strategies to reduce risks associated with social media use. Topics covered include interventions aimed at mitigating social media's negative impacts, the body-positivity movement, and policies regulating adolescents' social media use. Overall, this review highlights specific factors (such as staffing, duration, modality, facilitator training, and cultural sensitivity) to consider when designing and implementing social media interventions targeting adolescents. This review also discusses psychosocial outcomes associated with body positivity on social media. Finally, policy efforts to reduce the negative impact of social media on adolescents' body image and eating behaviors are described. In sum, there is a strong need to conduct further research identifying optimal approaches to reduce the harms of social media for adolescent body image and eating behavior.

**Keywords:** social media, body image, eating disorders, adolescent, review

## Introduction

Adolescence is typically characterized by an increased emphasis on peer relationships.<sup>1,2</sup> Currently, much of this adolescent peer interaction occurs on social media platforms, including Instagram, TikTok, Snapchat, and YouTube.<sup>2</sup> This is concerning, as a considerable amount of scientific literature connects social media use to negative mental health outcomes.<sup>2-6</sup> This review focuses specifically on the link between social media use and the increased risk of body dissatisfaction and eating disorders in adolescents.<sup>3-6</sup>

The link between social media use and body dissatisfaction attracted significant attention in the popular press in 2021, when research conducted by Meta (parent company of Facebook and Instagram) was leaked to the *Wall Street Journal*. Consistent with existing empirical data,<sup>4,5</sup> these internal findings demonstrated an association between social media use and body dissatisfaction in adolescent girls.<sup>7</sup> Specifically, 32% of adolescent girls surveyed for Meta's research indicated that Instagram made them feel worse about their bodies, particularly if they were already experiencing negative body image.<sup>7</sup> Since these data surfaced, multiple media companies have provided additional anecdotal evidence detailing the negative effects of social media on body image, underscoring the widespread public concern about the harmful impact of social media on adolescent body image.<sup>8</sup> The following sections briefly review the empirical data on this topic, provide a rationale for a harm-reduction approach to adolescents' social media use, and discuss research on specific harm-reduction strategies, including body positivity, interventions, and policy.

## Social Media Use Negatively Affects Adolescent Girls' Body Satisfaction and Eating Behaviors

As noted above, it is well established that social media use is associated with negative outcomes related to body image and disordered eating.<sup>3,5,6</sup> Moreover, there appears to be a dose–response effect. Adolescents with more social media accounts, and those who spend more time on social media, are more likely to engage in disordered eating behaviors.<sup>3,9</sup>

Furthermore, social media has become a common platform for weight-related teasing.<sup>10</sup> A systematic review noted that adolescents who experienced weight-related teasing or bullying (including cyberbullying) were more likely to experience negative body image and disordered eating behaviors.<sup>11</sup> Similarly, in a qualitative study, adolescent girls reported decreases in self-esteem after receiving weight-related comments online.<sup>12</sup> Clearly, the risks of social media go beyond simply viewing images posted online.

Multiple conditions that frequently precede or co-occur with eating disorders can also be exacerbated by social media use. For example, social media use is associated with higher levels of depression, anxiety, and psychological stress.<sup>13,14</sup> Moreover, greater amounts of time on social media confer higher risk of negative mental health outcomes.<sup>14</sup> Finally, all of the aforementioned symptoms are associated with increased eating disorder risk and symptom severity among those with eating disorders.<sup>15,16</sup>

### Social Media is Particularly Harmful

It is clear that adolescents' social media use can pose risks to their mental health, and researchers have begun to examine the mechanisms underlying this relationship. One proposed reason why social media seems particularly harmful to adolescents' mental health is because it claims to represent “reality”, yet the images presented are often unrealistic.<sup>17</sup> Social media influencers and users typically only post their most flattering images, and use editing software to manipulate their body shape and size, facial features, and other physical attributes.<sup>17</sup> Social comparison is extremely common among adolescents, and exposure to unrealistic (yet seemingly “real”) images on social media can both increase this normative developmental tendency and result in adolescents unfavorably comparing themselves to the bodies they see online.<sup>18</sup>

### Variations in Risks Posed by Various Types of Social Media

In addition, certain forms of social media appear particularly detrimental to adolescent body satisfaction and related outcomes. Specifically, image-based platforms, such as Instagram and TikTok, seem to pose greater risk, as posting and interacting with image-based content appears to have a more negative impact on body image than text-based content (see Vandenbosch et al, 2022, for a review).<sup>6</sup> Another concern is that posts on these image-based platforms are often retouched,<sup>17</sup> which some data suggest raises the risk of body dissatisfaction among adolescent girls. For example, results of an experimental study in which adolescent girls (N=144,  $M_{age}=15.92$  years) were randomly assigned to view either retouched or unretouched Instagram photos indicated that not only was exposure to retouched images associated with greater body dissatisfaction, but these effects were stronger in girls with higher social comparison tendencies.<sup>19</sup>

Interaction with pro-anorexia content, which includes tips for weight loss and content glorifying disordered eating behaviors, is particularly problematic, as it is associated with a higher drive for thinness and body dissatisfaction.<sup>20,21</sup> Similarly, “fitspiration” (content related to fitness and healthy living) and “detox” or “cleanse” sites also appear to have particularly negative impacts on adolescents' body image and eating behavior, increasing body dissatisfaction and physical comparisons.<sup>22,23</sup> This is concerning, as fitspiration and detox/cleanse pages purport to provide credible health information, but often share inaccurate, and at times dangerous, recommendations.<sup>22</sup> Moreover, a study conducted by Carrotte et al indicated that younger adolescents are more likely than older adolescents or young adults to view fitspiration and detox/cleanse pages on social media platforms.<sup>22</sup> Consequently, it seems important to enhance strategies to reduce the harm caused by social media, particularly given the ubiquity of its use among adolescents.

### A Harm-Reduction Approach

Given the concerns related to the negative impact of social media use on adolescents' body image and eating behaviors, professional organizations, such as the Academy for Eating Disorders, have recommended much stronger regulation of

its use among individuals under the age of 18.<sup>24</sup> This topic is discussed in detail in a subsequent section on social media policy. Critics of this proposed regulation argue that adolescents are likely to continue using social media in spite of potential harms or parental controls, and restrictions would prevent them from experiencing the positive aspects of these platforms.<sup>25</sup> Moreover, as is noted in the policy section of this review, regulatory restrictions are extremely difficult to pass in the current legal climate. Thus, it is critical to identify ways to facilitate healthy social media use and reduce harm to adolescent mental health within the current, relatively unregulated, context. A harm-reduction approach could mitigate the negative impacts of social media on adolescent body image and eating behavior.

The goal of harm reduction is to reduce the adverse effects caused by a given behavior, rather than eliminating the behavior itself. Harm reduction is a pragmatic approach to addressing public health impacts of high-risk behaviors, and varies from the more traditional strategy of encouraging abstinence.<sup>26</sup> Specifically, harm-reduction approaches acknowledge the reality that abstinence is not feasible for many, and does not offer individuals the support and tools that might provide protection from potential harm. In contrast, harm reduction focuses not on eradicating a behavior, but rather, on facilitating its implementation in a way that buffers individuals from experiencing negative outcomes.<sup>27</sup> This type of approach has been successfully implemented in the fields of drug and tobacco use, gambling, alcohol abuse, and eating disorders.<sup>26,28,29</sup>

A harm-reduction model might prove particularly useful when addressing the negative outcomes associated with adolescents' social media engagement. Adolescents are unlikely to discontinue their social media use, as it has become a central mode of social interaction in this age group.<sup>30,31</sup> Furthermore, requiring abstinence from social media limits adolescents' opportunities to develop healthy relationships with these communication platforms as they age into adulthood.

In sum, given that adolescents are likely to continue to engage in social media use, and this form of communication seems unlikely to disappear, it is particularly important to identify methods to minimize the harm of social media on body image and disordered eating. The remainder of this review highlights extant research on methods to mitigate the negative effects of social media on body image and disordered eating for adolescents. Specifically, the following sections review the literature on interventions promoting healthy social media use, the impact of body-positive content on social media, and avenues for policy change.

## Interventions to Promote Healthy Social Media Use in Adolescents

Numerous interventions have endeavored to address growing concerns regarding social media's deleterious impacts on adolescent body image and eating behaviors.<sup>32</sup> Most are delivered in school settings, and many have yielded positive results, including increases in body esteem,<sup>33</sup> body appreciation and satisfaction,<sup>34,35</sup> and reductions in dietary restraint.<sup>33</sup> However, many evaluations of these interventions are uncontrolled, unrandomized trials with limited follow-up assessments.<sup>33,35</sup> This review focuses primarily on the smaller number of studies that have used more rigorous methodologies, including randomized control trials (RCTs), to examine the impact of interventions targeting the effects of social media on adolescents' body image.

### School-Based Interventions

Interventions to promote adolescents' media health literacy (MHL), or the ability to recognize and think critically about health-related content in the media, are not novel, although most have focused on traditional (not social) media.<sup>32,36</sup> A recent meta-analysis of 16 experimental studies indicated that MHL interventions were associated with declines in body image concerns, eating concerns, and thin-internalization among youth aged 10–18 years, although the size and persistence of these changes varied across studies.<sup>32</sup> This meta-analysis also highlighted the relative lack of MHL school-based interventions specifically addressing adolescents' social (vs traditional) media use. This is concerning, as social media have several unique characteristics, including an interactive nature (eg, likes, comments), constant updating, and relatively little, or no, moderation or fact-checking of content. Moreover, the majority of adolescents' media consumption now occurs on social (not traditional) platforms.<sup>31</sup> Thus, there remains an urgent need to determine the most effective ways in which to enhance adolescents' ability to critically evaluate social media.

One RCT designed specifically to address adolescents' social media use, *The Healthy Body Image* intervention, included 12th-grade students ( $N=2446$ ;  $M_{\text{age}}=16.8$  years; 64% girls) from 30 schools in Norway.<sup>37</sup> This intervention, delivered by researchers, included three 90-minute sessions focused on body image, social media literacy, and health. The results indicated that intervention participation was linked to increases in positive embodiment (ie, a favorable and accepting relationship with one's body) and health-related quality of life among girls only, with effects maintained at 3- and 12-month follow-up.

Another school-based RCT evaluated *SoMe*, an intervention aimed at increasing social media literacy, enhancing body image, and decreasing dieting among early high school students in Australia ( $N=892$ ;  $M_{\text{age}}=12.77$  years; 50.5% girls).<sup>38</sup> *SoMe* included four lessons with assessments conducted at baseline, 5-week, 6-month, and 12-month follow-up. Contrary to expectations, intervention participation was not associated with improvements in body dissatisfaction, dietary restraint, self-esteem, depressive symptoms, body ideal internalization, or social comparisons. However, girls in the intervention manifested reductions in dietary restraint and depressive symptoms at 6-month follow-up, compared with the control group. Similarly to Sundgot-Borgen et al,<sup>37</sup> the intervention appeared to be less effective for boys.

*Dove Confident Me*, another school-based intervention, was evaluated in an RCT conducted by Diedrichs et al<sup>39</sup> in Great Britain ( $N=1403$ ; ages 11–13 years; 48.6% girls). The intervention's five sessions, delivered by trained teachers, addressed appearance ideals, media messages, appearance comparisons, body talk, and body confidence.<sup>39</sup> The intervention group reported increased body-esteem through 6-month follow-up in both boys and girls. Girls also experienced less appearance-related teasing through 12-month follow up. This study's long follow-up period (up to 36 months) is a notable design strength.

It is often difficult to deliver multi-session interventions within the school setting, given all the demands placed on students, faculty, and staff, and the need to prioritize instructional time for core academic subjects.<sup>34</sup> To address this concern, Bell and colleagues developed *Digital Bodies*, a single-session (60-minute) intervention focused on challenging "unrealistic appearance ideals and pressure to conform to these ideals, as they manifest within the social media environment" (p. 4).<sup>34</sup> Participants were younger adolescents ( $N=290$ ,  $M_{\text{age}}=12.81$  years; 52.1% girls). Classes within a single school were randomly assigned to receive either the intervention or wait-list condition. The intervention was delivered by trained research assistants. At both post-testing and 8-week follow-up, the intervention group reported higher body satisfaction than the control group. Among girls, thin-ideal internalization was also reduced at post-testing, but this effect was no longer evident at 8-week follow-up. This study is limited by the fact that there was no active control group, and it was conducted in a single school; thus, contamination may have influenced the results. Nonetheless, it is noteworthy that this very brief intervention yielded a positive effect regarding its primary target, body satisfaction, and that this change was identified in both boys and girls.<sup>34</sup>

Guest et al<sup>40</sup> conducted an RCT using a novel intervention delivery approach in their school-based social media program targeting 9–11-year-olds in England (44.8% girls). Specifically, these researchers designed a board game ("Everybody's Different: The Appearance Game") to increase knowledge regarding appearance-related issues, promote positive body image, enhance social media literacy, and foster acceptance of appearance diversity. Participants played the board game once for 40 minutes and completed assessments at pre-, post-, and 2-week follow-up. The results indicated a significant increase in knowledge of appearance-related issues in the intervention group compared with the control group post-intervention, although this effect was not maintained at follow-up. However, there were no significant differences between groups in terms of body appreciation, media literacy, or acceptance of visible difference. A limitation of this study is that the sample was not racially diverse (72.2% white). Nonetheless, this investigation is noteworthy as it highlights a different school-based intervention approach.

## Culturally Sensitive Interventions

A limitation of much of the research on school-based social media interventions involves the lack of racial and ethnic diversity within samples and the relative absence of culturally sensitive content. Many body-image prevention programs were initially developed and implemented in samples of white European and American girls, but researchers have emphasized the necessity of including girls and boys from various cultural backgrounds to enhance generalizability.<sup>41,42</sup>

A few studies have endeavored to address these limitations by evaluating the impact of social media and body image interventions for ethnically diverse groups.

For example, Lewis-Smith et al<sup>43</sup> conducted an RCT evaluating the five-session *Dove Confident Me* intervention (an adaptation of the *Dove Confident Me* intervention described above<sup>39</sup> in a sample of Indian adolescent boys and girls [N=568, ages 11–14 years; 43% girls]. The intervention was adapted to enhance its relevance for Indian adolescents, including addressing specific body-image issues, such as body hair dissatisfaction, and adding culturally meaningful references (eg, Bollywood).<sup>44</sup> These adaptations were made in consultation with both Indian adolescents and experts in Indian body image, with the former group rating the acceptability of the intervention materials in pilot work. The intervention was facilitated by psychologists (with master's degrees, prior group treatment experience, and training from the intervention developers). The results indicated that, compared with a control group, intervention participants manifested increases in body and self-esteem, and decreases in eating pathology, internalization of appearance ideals, and life disengagement at post-testing; most of these effects were maintained at 3-month follow-up.

A single-session version of the *Dove Confident Me* intervention was evaluated in a sample of Indonesian adolescent boys and girls (N=1926,  $M_{age}$ =13.7 years; 59.4% girls).<sup>45</sup> The program was led by guidance counselors and delivered in five schools. Adaptations were made to the original *Dove Confident Me* intervention<sup>39</sup> to enhance its cultural relevance for Indonesian adolescents. This multi-step process was conducted in consultation with Indonesian teachers, adolescents, and health and government officials.<sup>45</sup> Schools were randomized to either the intervention or control group. At post-testing, there was a significant difference found between groups on appearance comparison, with the intervention group showing a smaller increase in this construct compared with the control group. However, no group differences in body esteem, appearance ideal internalization, positive and negative affect, or skin shade satisfaction were evident.<sup>45</sup>

The study's authors posited that variations in intervention fidelity might, at least partially, account for the observed lack of group differences in outcomes.<sup>45</sup> For example, intervention adherence ranged widely (from 28% to 91%), and students' participation in discussions ranged from 8% to 100%. This trial was also conducted between November 2021 and April 2022; during that time, schools pivoted between remote and in-person learning multiple times because of the COVID-19 pandemic. Analyses did not identify statistically significant differences in outcomes when comparing online to in-person intervention delivery, but qualitatively, the facilitators noted that students often had their cameras off during online sessions, and they expressed concern about students' perceived engagement. Cultural factors may also have influenced students' intervention participation (both in-person and online). Many students reported feeling uncomfortable speaking up in the class, as doing so is inconsistent with the traditional educational approach in Indonesia. The study's authors suggest that multi- (vs single-) session interventions may be more appropriate in more hierarchical cultures such as Indonesia, to allow students more time to become comfortable expressing their thoughts. In addition, compared to the similar intervention conducted by Lewis-Smith et al in India,<sup>43</sup> the Indonesian study involved facilitators with less education who received less training in intervention delivery (e.g., psychologists vs school guidance counselors, most without postgraduate degrees; 12 hours of in-person training vs 4.5 hours of online training). All of these factors likely influenced the internal validity of the trial and highlight issues that should be considered in future school-based intervention research.

Two additional interventions targeting media literacy and body image in culturally diverse adolescents were delivered, not in schools, but rather, via social media platforms.<sup>46,47</sup> Specifically, Garbett et al evaluated a self-guided, six-session intervention for Indonesian girls (*Warna-Warni Waktu*), delivered via video. These videos were designed to be disseminated on social media platforms (eg, Instagram, YouTube). Participants (N=1847,  $M_{age}$ =16.96 years) were randomly assigned to either the intervention or a wait-list control group, and completed assessments at baseline, one day after the intervention's completion, and at one-month follow-up. Statistically significant reductions in the internalization of appearance ideals were identified at both post-testing and one-month follow-up. Improvements in body satisfaction were also noted at one-month follow-up. Based on these findings, the study's authors concluded that the *Warna-Warni Waktu* intervention is effective and can feasibly be delivered using social media platforms with which the target audience is familiar.

Matheson et al evaluated the effectiveness of *Topity*, a chatbot microintervention, delivered to Brazilian adolescents on Facebook Messenger.<sup>47</sup> The authors define microinterventions as “brief, digital, and self-guided approaches that use

in-the-moment techniques to provide immediate symptom relief or enhancement” (p. 2). *Topity* leads users through eight microintervention techniques, addressing three themes: family, friends and body image; social media and body image; and body appreciation and functionality.<sup>47</sup> Each technique can be completed in approximately 5–10 minutes, and participants cannot move on to the next section without completing the prior one. In their RCT, Matheson et al randomized participants (N=1715, ages 13–18 years; 52.5% girls) to either the intervention or control group. The results indicated that program participation yielded improvements in state and trait body image. However, this study had several limitations. In particular, only 38.1% of the individuals randomized to the intervention condition entered the chatbot. Nonetheless, among these individuals, 78.9% completed at least one of the eight microinterventions. Another concern is that study attrition was high. Only 46.53% of participants provided data at post-testing; these rates decreased to 33.82% and 26.76% at one-week and one-month follow-up, respectively. Attrition also varied by group assignment, with more participants dropping out of the intervention arm. In spite of these limitations, the study’s authors concluded that this microintervention has many strengths, including its relative ease of dissemination and the use of a social media platform with which adolescents are already familiar.

## Summary of Intervention Research

In sum, the reviewed RCTs demonstrate the importance of considering various factors when designing, implementing, and understanding school-based interventions targeting the impact of social media on adolescent body image and eating behaviors. These include *who* will facilitate the intervention (e.g., researchers, teachers, a chatbot), *how long* it will be (e.g., a single session or five or more sessions), *in what modality* the information will be communicated (e.g., board games, classroom sessions, online), how much *facilitator training* is needed, and how *participant engagement* can be optimized and *attrition* minimized. In addition, there are several ways in which future research can build upon these investigations. First, researchers should be mindful of gender differences. Although some studies reported similar results for both adolescent boys and girls,<sup>39</sup> most interventions yielded minimal effects for boys<sup>37,38</sup> or did not include them.<sup>48</sup> Future research should consider gender in intervention design and implementation, and account for the unique challenges and experiences faced by different genders in relation to body image and social media. Further, although newer studies have adapted and implemented these interventions in some culturally diverse groups,<sup>43,48</sup> many have not included racially or ethnically diverse samples, limiting the generalizability of findings. In addition, the limited examination of long-term effects is a significant gap in the literature. Only one of the reviewed trials included an assessment longer than 12 months post-intervention.<sup>39</sup> Moreover, many studies had high attrition, making it difficult to determine true intervention effects. It is especially important to determine the sustainability of any observed effects when working with younger adolescents (ages 9–12 years), as this is a sensitive period for the development of body-image dissatisfaction and disordered eating behaviors.<sup>49</sup>

## Body Positivity on Social Media

As noted above, extant literature has repeatedly demonstrated the role of media in the development and maintenance of body dissatisfaction and disordered eating.<sup>50</sup> However, in recent years, a body-positive (or “body-positivity”) movement has emerged to both challenge unrealistic appearance ideals and promote appreciation of diverse bodies.<sup>51</sup> Researchers are continuing to explore the potential effects of this movement, with some studies suggesting that it has beneficial effects on body satisfaction and related behaviors, including disordered eating.<sup>52</sup> However, some have expressed concern about potential pitfalls of body positivity, including its reinforcement of a focus on appearance.<sup>53,54</sup> The following section briefly reviews existing research investigating the impact of body-positive content on social media.

## Positive Body Image

Positive body image is conceptualized as an overarching love and respect for one’s body that ultimately results in positive thoughts, feelings, and behaviors (e.g., self-care and engagement in preventive health) towards one’s body.<sup>55,56</sup> After years of research focusing on negative body image, or body-image dissatisfaction, positive body image emerged as a construct separate and distinct from negative body image, with unique predictors and outcomes.<sup>56</sup> Indeed, positive body image is linked to numerous indices of psychosocial health and well-being, including self-esteem, self-compassion,

positive emotions, life satisfaction, proactive coping, optimism, and intuitive eating.<sup>56</sup> Thus, positive body image has been emphasized as a critical target for both eating-disorder prevention and the treatment of body-image disturbance.<sup>56</sup> According to Tylka and Wood-Barcalow,<sup>56</sup> reduction of negative body image results in neutral body image “at best”, while enhancing positive body image helps individuals to “appreciate, respect, celebrate, and honor their bodies”, ultimately resulting in more effective and lasting mental and physical wellness<sup>56</sup> (p. 118). Overall, the body-positive movement strives to enhance positive body image, and reduce negative body image, by encouraging body acceptance and challenging sociocultural appearance ideals.<sup>52</sup>

The body-positive movement has significant roots in previously established feminist movements, such as the 1960s’ fat-acceptance movement, as well as in present-day social justice movements such as Health At Every Size.<sup>57–59</sup> These body-focused movements are centered around challenging oppressive systems, such as weight stigma, and amplifying the voices of marginalized individuals. Similarly, the body-positive movement embraces diverse body types and images as an act of resistance and freedom. Thus, body-positive messages are used to both target negative body image and its associated negative sequelae (e.g., disordered eating)<sup>52,60</sup> and communicate participation in a social justice movement for health and empowerment of historically marginalized bodies.<sup>57,61</sup>

## Body-Positive Social Media Content

The body-positivity movement has grown substantially on social media, particularly on the image-based platform Instagram.<sup>62</sup> Body-positive content on social media typically portrays “diverse” physical appearances along with themes and messages consistent with positive body image.<sup>51,53</sup> For example, in a content analysis of body-positive Instagram posts conducted by Cohen et al,<sup>62</sup> 94% of bodies depicted in posts deemed “body positive” ranged from “normal” weight to “obese”, and 40% of posts highlighted bodily attributes that diverge from beauty ideals, such as cellulite, stretch marks, and stomach rolls. These visual Instagram posts were accompanied by captions promoting body acceptance, challenging sociocultural norms, and highlighting beauty in diverse appearances.<sup>62</sup>

Although the body-positivity movement purports to emphasize body diversity, another content analysis of Instagram images revealed that the vast majority of body-positive posts displayed a female figure (85%), most of whom were white (67%), and in their twenties (66.9%).<sup>53</sup> Similarly, a recent content analysis of 342 TikTok videos with the hashtag “bodypositivity” indicated that most individuals depicted were female (95.3%), white (68.7%), and under the age of 30 (98.2%, most of whom were between the ages of 15 and 20 years); about half of the bodies in these videos were perceived by raters as “normal” weight (49.5%), 26.9% as “overweight”, 5.2% as “obese”, and 1.2% as “underweight”.<sup>63</sup> Moreover, videos were rated as embodying cultural beauty ideals “somewhat” (44.2%) or “to a great extent” (48.5%).<sup>63</sup> Body-positive themes, defined by the authors (and based on past research) as including body appreciation, body acceptance/love, conceptualizing beauty broadly, adaptive investment in body care, inner positivity, protective filtering of information in a body-protective manner, and fat acceptance, were rated as present in only 32.2% of the videos. The study’s authors conclude that purported body-positive content is not actually that positive; in addition, these TikTok videos included fewer individuals with larger bodies, compared to earlier analyses of Instagram body-positive content.<sup>53</sup> In sum, the results of content analyses across social media platforms suggest that body-positivity content typically displays somewhat more diverse body sizes; however, in many other ways (eg, skin tone, age), body-positive content is relatively homogeneous and only minimally deviates from traditional Western beauty ideals.

## Effects of Body Positivity on Social Media Users

Numerous studies have examined the potential benefits of viewing body-positivity content on social media. To date, most quantitative body-positive research has included young adults, primarily undergraduate students. For example, in one experimental study, participants (ages 18–33 years) viewed same-gender images of fitspiration, self-compassion quotes (eg, “It’s ok to take a break”, p. 17), a combination of fitspiration and self-compassion quotes, or neutral images.<sup>64</sup> The researchers reported that viewing fitspiration posts was associated with lower body satisfaction and appreciation compared with viewing the neutral and self-compassion posts; viewing self-compassion quotes only was associated with improved body satisfaction and appreciation scores compared with participants exposed to neutral images; however, the combined condition did not yield significant differences compared to the fitspiration condition.<sup>64</sup> Thus, the study’s

authors<sup>64</sup> concluded that unfollowing accounts displaying fitspiration, and following accounts promoting self-compassion, could benefit social media users.

Stevens and Griffiths<sup>65</sup> conducted a one-week, smartphone-facilitated ecological momentary assessment protocol with undergraduates, and reported that viewing body-positive content (primarily on Instagram) was associated with greater body satisfaction, lower negative affect, and greater positive affect. This study was unique in that it provided data based upon viewers' naturalistic experience of body-positivity content, rather than content presented within a laboratory setting.<sup>65</sup>

Another experimental quantitative study included participants aged 16–30 ( $M_{age}=21.3$  years; 91.5% white) and assessed the impact of viewing images in one of three conditions: body diversity, thin-ideal bodies, or control images.<sup>66</sup> The body diversity images were compiled from a campaign, entitled Portrait Positive, which includes racially and ethnically diverse women with facial differences, scars, and other physical variations.<sup>67</sup> Participants exposed to the body diversity images reported significant increases in body compassion, face satisfaction, and negative attitudes towards thin-ideal images, relative to other groups. The study's authors concluded with a call for greater body diversity and representation in media to reduce thin-ideal internalization and support self-compassion.<sup>66</sup> Although these initial studies support the idea that viewing diverse body-positive content may benefit viewers, more research is needed to assess the impact of body-positive content on adolescents younger than 18 and adults older than 30 years, as well as on men and women of color, and gender and sexual minoritized groups.

Qualitative research has provided additional insight into adolescents' experiences with body-positive content on social media. Burnette et al<sup>68</sup> conducted group interviews with middle-school girls ( $N=38$ , ages 12–14 years) to explore relationships between social media use and body image. This study revealed that middle-school girls engage in strategies to mitigate social media's potentially harmful influence on body image, such as reported avoidance of content that could damage self-esteem; however, this study did not specifically assess participants' engagement with body-positive content. More recently, Rodgers et al<sup>69</sup> conducted semi-structured, individual interviews in a sample of 33 participants (ages 14–25 years) exploring the impact of viewing body-positive content. Their results suggested that body-positive content promoting resistance to appearance ideals, encouraging body appreciation, or highlighting the unrealistic nature of social media is beneficial for many adolescents and young adults.<sup>69</sup> However, the degree to which this body-positive content is helpful seems to depend upon similarities between the characteristics of the content and the viewer. Specifically, greater perceived sociodemographic similarities between content and viewer were perceived by participants as more helpful.<sup>69</sup> More qualitative and quantitative research is needed to explore factors influencing the effects of body-positive content on viewers, especially for adolescents.

## Influence of Various Types of Body-Positive Content

Two recent reviews of body-positive social media literature supported the relationship between body-positive content and higher body satisfaction and positive body image; nonetheless, both also concluded that results regarding the effects of various types of body-positive content on viewers' body image were mixed.<sup>6,70</sup> For example, in an experimental study of 202 female-identifying undergraduate students, Hendrickse et al<sup>71</sup> found that the group assigned to view Instagram advertisements with plus-sized models reported greater improvements in body satisfaction than the group who viewed advertisements with thin models, regardless of whether or not a slogan accompanying the model's image was empowering (eg, "I define my worth") or objectifying (eg, "His to touch"). These authors concluded that women are benefitting from viewing "plus-size" images. Additional studies are needed to explore potential differences in the effects of various types of body-positive social media content (eg, captions, images, video). In addition, more research is needed to examine both the mechanisms driving outcomes associated with body-positive content and individual-level moderators, including those related to intersectional identities of both the viewer and the image portrayed.

## Criticisms of the Body-Positivity Movement

Although viewing body-positive content appears to be related to improvements in body image and self-esteem, some experts have expressed concern about potential pitfalls of this social media movement. Previous reviews of the literature have revealed three main criticisms of body-positive content: 1) it is focused on appearance, and therefore perpetuates

society's problematic prioritization of appearance; 2) it is an unattainable standard (e.g., it is unrealistic to expect to feel positively about one's body 100% of the time); and 3) it could contribute to negative weight–health outcomes (particularly obesity).<sup>51,52</sup> One study which addressed the first of these critiques was conducted by Cohen et al,<sup>72</sup> with a sample of young women ( $M_{\text{age}}=21.69$  years) randomly assigned to view Instagram posts that were body-positive, thin-ideal, or appearance-neutral. The results indicated that brief exposure to body-positive Instagram posts was associated with significant improvements in positive mood, body satisfaction, and body appreciation, relative to viewing thin-ideal or appearance-neutral posts. However, exposures to body-positive and thin-ideal posts were also associated with increased self-objectification. Thus, the researchers indicated that body-positive imagery is associated with improved mood and body image; however, it may reinforce a continued focus on appearance.<sup>72</sup>

In response to concerns that body positivity could inadvertently increase a focus on appearance, some experts have advocated for “body neutrality”, or a de-emphasis on physical appearance altogether.<sup>73,74</sup> Body neutrality, with a focus on body functionality, is described as both more attainable than body positivity for those with significant body dissatisfaction, and more aligned with a sociocultural shift towards deprioritizing appearance.<sup>54</sup> Furthermore, some have conceptualized body neutrality as a final stage of body positivity, one which occurs after the stages of body appreciation and liberation.<sup>69</sup>

Cohen and colleagues' review<sup>51</sup> examined the third critique noted above, the concern that body-positive content could contribute to poor health outcomes by encouraging unhealthy lifestyles, and did not identify any support for this notion. These results are consistent with the well-documented findings that weight stigmatization is an ineffective weight-loss motivator, and is associated with the perpetuation of unhealthy weight behaviors, and increased risk of anxiety, depression, body dissatisfaction, and other psychological concerns.<sup>75</sup> Thus, if body-positive content on social media improves an individual's psychological well-being and self-esteem, it seems likely to benefit overall health and engagement in positive health behaviors; however, more research is needed.

In sum, the available data generally support the association between body-positive content and greater self-esteem, self-compassion, and positive body image (with the strength of these associations depending on the content type viewed and characteristics of the viewer). However, most research has included primarily white, young adult females. Thus, more experimental research is needed to examine the impact of body-positive content on diverse populations and inform future efforts to promote content with the greatest potential to enhance the well-being of the largest number of viewers.

## Policy Approaches to Mitigate Harms of Social Media for Adolescents

As noted in the Introduction, in 2021, internal documents from Meta (the parent company of Instagram and Facebook) provided evidence of the company's awareness of the link between Instagram use and adolescent girls' body-image concerns.<sup>76</sup> Also in 2021, the *Wall Street Journal* published an investigation of TikTok which indicated that the platform's algorithms directed extreme weight-loss content to young adolescent users' feeds.<sup>77</sup> These revelations have exponentially increased calls for policies to regulate the practices of social media platforms, particularly related to their targeting of youth.<sup>24</sup> The following sections review some of the more common policy-based approaches intended to mitigate the harms of social media, particularly for adolescent girls.

### Age Restrictions

The Children's Online Privacy Protection Act (COPPA) is a United States federal law enacted in 1998 that prevents social media platforms from collecting, using, or disclosing personal information about children under the age of 13 without parental consent.<sup>77</sup> In response to COPPA, social media platforms typically began requiring users to be at least 13 years of age in order to create accounts. This practice enabled platforms to deny both that their content was directed at young children and that they need to comply with COPPA.<sup>77</sup>

However, in practice, age restrictions are generally considered ineffective. No verification of age or parental consent is required to establish accounts, and children can easily provide false information. Because platforms argue that COPPA does not apply to them (as they claim account holders must be 13 years of age), advertising is unrestricted, exposing users to inappropriate content. Another recently proposed law (currently blocked in a federal court), the California Age-

Appropriate Design Code, does include more robust age-verification guidelines.<sup>77</sup> This law is discussed in more detail in a subsequent section.

## Hashtag Policies

Problematic hashtags, such as #proana, #thighgap, and #thinspiration, have been concerns on social media platforms for over a decade.<sup>76</sup> Social media platforms quickly blocked searches for these hashtags; however, this practice has done little to stop the proliferation of this problematic content.<sup>76</sup> Users can easily circumvent these restrictions, by misspelling these hashtags or using more ambiguous hashtags. Also, social media content does not require hashtags, and the platforms' algorithms automatically encourage users to view content similar to that with which they have already engaged, deepening their involvement with this material. In addition, focusing on hashtags ignores other common ways in which adolescents, in particular, use social media, including direct messages and "stories", which can disappear after 24 hours. Thus, although the desire to eliminate problematic hashtags is understandable, these efforts have not proven useful and experts recommend shifting limited resources to other policy approaches.<sup>76</sup>

## "Like" Count Policies

In 2019, Instagram began hiding posts' "like" counts, although users could still see how many "likes" their own posts received. In 2021, the platform reversed this policy, but users could opt to keep their like counts hidden.<sup>76</sup> There are no known empirical investigations of the effects of this transient policy on users' body image. However, Sharp and Gerrard highlight this effort as an example of a way in which social media platforms are

relying on quick, technical 'fixes' to remedy much longer-standing, complex problems" (p. 269).<sup>76</sup>

## Subvertising and Disclaimers

Two additional strategies that endeavored to mitigate the harms of social media viewing are disclaimer or warning labels and subvertising.<sup>50</sup> Disclaimer labels are statements that warn users that images have been altered (e.g.,

This image has been Photoshopped", p. 171).<sup>50</sup>

Subvertising refers to altering advertisements by including social commentary that undermines or highlights hypocrisies in their messages.<sup>50</sup> An example is this text added to a cereal advertisement:

Hey there ... I know you think I should diet so that I can be slim just like you. Thing is, I think I look pretty fabulous just the way I am"" (p. 172).<sup>50</sup>

These approaches are intuitively appealing, and, indeed, some countries (e.g., France, Israel) have enacted legislation requiring disclaimers on altered photos included in advertisements.<sup>78</sup> Unfortunately, empirical studies, including a meta-analysis,<sup>78</sup> have generally not supported the hypothesis that disclaimers offer viewers a protective benefit with respect to body satisfaction and related outcomes.<sup>17,50</sup> Moreover, disclaimers have been linked with negative outcomes, including increases in state appearance comparisons, particularly for the most vulnerable individuals (eg, those with higher levels of body-image concerns).<sup>78</sup> Experts have hypothesized that these unexpected negative outcomes may occur because the disclaimers focus attention on the bodies of the individuals depicted.<sup>50,79</sup>

Fewer studies have directly examined the effects of subvertising; however, Frederick et al<sup>50</sup> conducted two investigations with large (N=1268 and N=820) samples of adult women, and found that subvertising had no effect on body dissatisfaction, drive for thinness, or appearance comparisons. In sum, although the desire to label images as unrealistic is an intuitively appealing strategy to protect body image and related outcomes, existing data do not support its effectiveness.

## Policies Related to Weight-Based Bullying

Another recommendation made to buffer social media's effects on users, especially adolescents, is to strengthen protections against weight-based discrimination. There are currently no federal policies addressing weight-based

discrimination, despite significant data highlighting its physical and psychological harms.<sup>80</sup> Moreover, there is strong public support for policy initiatives to prevent weight stigmatization and weight-based bullying.<sup>80</sup> Although these policies are not specific to bullying and stigmatization occurring on social media, adolescents report that these platforms are common settings in which these incidents take place (typically in the form of weight-based bullying).<sup>81</sup> Existing anti-bullying laws designed to protect children and adolescents often do not specify weight as a protected category; this is concerning as research suggests weight-based bullying occurs less frequently in states that specifically highlighted weight within their anti-bullying laws, compared with those that did not.<sup>81</sup> In a 2022 review, Puhl<sup>80</sup> noted that across studies, the vast majority of parents in the United States (78–86.2%) supported strengthening anti-bullying laws by specifically enumerating weight as a protected category. Thus, scientists and clinicians should work with policymakers to facilitate these changes in anti-bullying legislation at both the state and federal levels.

## California Age-Appropriate Design Code

A specific law considered by many to be one of the most significant steps in increasing protections for minors using social media is the California Age-Appropriate Design Code.<sup>77</sup> This Code, passed in California in September 2022, was supposed to go into effect in July 2024, but is currently blocked from implementation by a federal court injunction.<sup>82</sup> The Code sets several standards that social media platforms must meet, including

conduct[ing] a Data Protection Impact Assessment for services or platforms likely to be accessed by consumers younger than the age of 18, establish[ing] the age of consumers using the platform with a level of certainty, and ensur[ing] that minor users' platform websites and apps are set to the highest level of privacy possible. (p. 159)<sup>77</sup>

It also

prohibits social media platforms from using private information of a child user in a way that is harmful to the physical and mental health of the child, [and] ... using deceptive design functions, such as targeted advertising .... (p. 159)<sup>77</sup>

Costello et al note that a major advantage of the California Code is that it shifts the burden of protecting children's safety on social media sites from parents (as COPPA does) to the sites themselves.<sup>77</sup> Another advantage of this law is that it is preventive rather than reactive: it is not necessary for a specific individual to prove that harm has occurred; instead, all minors can be protected as a group, ideally before experiencing harms from their interactions with social media content.<sup>77</sup>

One limitation of the Data Protection Impact Assessments required by this law is that they can be conducted by the social media companies themselves and do not have to be publicly disclosed. Costello et al<sup>77</sup> argue that these assessments should be conducted by impartial third parties and disclosed to the public to enhance social media companies' accountability. These authors also go a step further and recommend that these impartial third parties conduct algorithm risk audits, a recommendation reviewed in depth in the following section.

## Algorithm Policies

Part of Section 230 of the US Communications Decency Act of 1996

suggests that social media networks are not personally responsible for the content posted on their platforms (p. 294).<sup>63</sup>

Eating disorder experts have recommended reforms to this Act; however, such revision is complicated by concerns about free speech.<sup>77</sup> Harriger et al<sup>63</sup> do not recommend restricting speech, but, instead, encourage removal of existing protections that allow social media platforms to present problematic content to users via the use of algorithms. As Costello et al state,

The most pernicious practice is arguably the use of algorithms that relentlessly direct targeted content to minors on their social media feeds" (p. 165).<sup>77</sup>

Despite the potential danger that algorithms pose, they remain extremely difficult to regulate, as they are computer code, and the Supreme Court has determined that such codes are protected speech under the First Amendment.<sup>77</sup>

As an alternative, Harriger et al<sup>63</sup> suggest the use of non-algorithmic feeds, which would allow users to have more control over what they see on the various platforms. However, platforms are likely to resist giving up algorithms, especially given their significant economic benefits.<sup>77</sup> Thus, at a minimum, Harriger et al, and professional groups, such as the Academy for Eating Disorders,<sup>24</sup> recommend that social media platforms offer greater transparency regarding how algorithms are derived, restrict the use of micro-targeted advertisements, and avoid directing users to problematic content.<sup>63</sup>

Costello et al<sup>77</sup> go a step further, and, based on their review of the mental health and legal research, conclude that laws created to protect minors online must identify how online platforms use algorithms and incorporate enforcement procedures, such as auditing algorithm risk, rather than simply prescribing prohibitions. These audits would involve: 1) identifying the harm caused by, for example, being encouraged to view pro-eating disorder content after viewing body-image-related material; 2) measuring the harm (eg, number of users affected), and determining whether it disproportionately affects certain groups (eg, adolescents); and 3) establishing reporting processes and benchmarks to mitigate any identified harm. These authors further emphasize that it is essential for these reports to be reviewed by independent, third-parties, for their results made publicly available, and agreed-upon benchmarks enforced. These audits would not restrict free speech, or prevent algorithms from being used in general, thereby addressing concerns raised by social media providers.<sup>77</sup>

## Conclusions Regarding Policies Regulating Social Media for Adolescents

Policies are sometimes proposed, and even implemented, because of their intuitive appeal; however, it is essential that empirical data investigate the effectiveness of any proposed policy. Within the area of social media and body image, ideas such as the moderation of hashtags, removal of “like” counts, and disclaimers were all interventions met with excitement, but the data suggest that they are often ineffective, and even potentially harmful.<sup>78</sup> Rules such as age limits sound obvious, but are simple to circumvent if no verification procedures are put into place. Rather, stronger, more enforceable strategies seem warranted, such as independent audits of algorithm risk. In sum, this review suggests that scientists must work together with legislators and social media platforms to develop, implement, and evaluate enforceable, evidence-based policies regulating adolescents’ social media use.

## Conclusion

This review investigated approaches to reduce the risk of harm that social media poses to adolescent body image and eating behaviors. Potential pathways for harm reduction include interventions, body-positive content, and policy change. Although some interventions have demonstrated increased body satisfaction in adolescents, more research is needed to investigate their effectiveness both over the long term and in more diverse racial, ethnic, and gender groups. Similarly, body-positive content challenges unrealistic appearance ideals, fosters individual and societal appreciation for diverse bodies, and appears to enhance self-esteem, self-compassion, and positive body image in viewers. However, extant studies have primarily included emerging adults, and further research is needed to enhance the understanding of the effect of this content on younger adolescents. Finally, there remains a strong need to continue to pursue evidence-based legislation to regulate the social media content to which adolescents are exposed.

## Disclosure

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## References

1. Brown BBLarson J, Lerner RM, Steinberg L. *Handbook of Adolescent Psychology: Contextual influences on adolescent development*. Vol. 2. 3rd ed. (John Wiley & Sons Inc.) 2009 Available From: <https://onlinelibrary.wiley.com/doi/10.1002/9780470479193.adlpsy002004>.
2. Mittmann G, Woodcock K, Dörfler S, Krammer I, Pollak I, Schrank B. “TikTok is my life and snapchat is my ventricle”: a mixed-methods study on the role of online communication tools for friendships in early adolescents. *J Early Adoles*. 2022;42(2):172–203. doi:10.1177/02724316211020368
3. Dahlgren CL, Sundgot-Borgen C, Kvaalem IL, Wenersberg AL, Wisting L. Further evidence of the association between social media use, eating disorder pathology and appearance ideals and pressure: a cross-sectional study in Norwegian adolescents. *J Eat Disord*. 2024;12(1):34. doi:10.1186/s40337-024-00992-3

4. Holland G, Tiggemann M. A systematic review of the impact of the use of social networking sites on body image and disordered eating outcomes. *Body Image*. 2016;17:100–110. doi:10.1016/j.bodyim.2016.02.008
5. Saiphoo AN, Vahedi Z. A meta-analytic review of the relationship between social media use and body image disturbance. *Comput Human Behav*. 2019;101:259–275. doi:10.1016/j.chb.2019.07.028
6. Vandenbosch L, Fardouly J, Tiggemann M. Social media and body image: recent trends and future directions. *Curr Opin Psychol*. 2022;45:101289. doi:10.1016/j.copsyc.2021.12.002
7. Wells G, Horwitz J, Seetharaman D Facebook knows Instagram is toxic for teen girls, company documents show. *Wall Street Journal*; Available from: <https://www.wsj.com/articles/facebook-knows-instagram-is-toxic-for-teen-girls-company-documents-show-11631620739>. Accessed March 13, 2024.
8. Network TL What students are saying about how social media affects their body image. *The New York Times*. 2024.
9. Wilksch SM, O’Shea A, Ho P, Byrne S, Wade TD. The relationship between social media use and disordered eating in young adolescents. *Int J Eating Disord*. 2020;53(1):96–106. doi:10.1002/eat.23198
10. Polanin JR, Espelage DL, Grotzpetter JK, et al. A systematic review and meta-analysis of interventions to decrease cyberbullying perpetration and victimization. *Prev Sci*. 2022;23(3):439–454. doi:10.1007/s11121-021-01259-y
11. Day S, Bussey K, Trompeter N, Mitchison D. The impact of teasing and bullying victimization on disordered eating and body image disturbance among adolescents: a systematic review. *Trauma Violence Abuse*. 2022;23(3):985–1006. doi:10.1177/1524838020985534
12. Berne S, Frisén A, Kling J. Appearance-related cyberbullying: a qualitative investigation of characteristics, content, reasons, and effects. *Body Image*. 2014;11(4):527–533. doi:10.1016/j.bodyim.2014.08.006
13. Keles B, McCrae N, Grealish A. A systematic review: the influence of social media on depression, anxiety and psychological distress in adolescents. *Int J Adolesc Youth*. 2020;25(1):79–93. doi:10.1080/02673843.2019.1590851
14. McCrae N, Gettings S, Purssell E. Social media and depressive symptoms in childhood and adolescence: a systematic review. *Adolesc Res Rev*. 2017;2(4):315–330. doi:10.1007/s40894-017-0053-4
15. Barakat S, McLean SA, Bryant E, et al. Risk factors for eating disorders: findings from a rapid review. *J Eat Disord*. 2023;11(1):8.
16. Spindler A, Milos G. Links between eating disorder symptom severity and psychiatric comorbidity. *Eating Behav*. 2007;8(3):364–373. doi:10.1016/j.eatbeh.2006.11.012
17. Tiggemann M. Digital modification and body image on social media: disclaimer labels, captions, hashtags, and comments. *Body Image*. 2022;41:172–180. doi:10.1016/j.bodyim.2022.02.012
18. Krayer A, Ingledew DK, Iphofen R. Social comparison and body image in adolescence: a grounded theory approach. *Health Educ Res*. 2008;23(5):892–903. doi:10.1093/her/cym076
19. Kleemans M, Daalmans S, Carbaat I, Anschutz D. Picture perfect: the direct effect of manipulated Instagram photos on body image in adolescent girls. *Media Psychol*. 2018;21(1):93–110. doi:10.1080/15213269.2016.1257392
20. Moorman EL, Warnick JL, Acharya R, Janicke DM. The use of internet sources for nutritional information is linked to weight perception and disordered eating in young adolescents. *Appetite*. 2020;154:104782. doi:10.1016/j.appet.2020.104782
21. Custers K. The urgent matter of online pro-eating disorder content and children: clinical practice. *Eur J Pediatr*. 2015;174(4):429–433. doi:10.1007/s00431-015-2487-7
22. Carotte ER, Vella AM, Lim MSC. Predictors of “liking” three types of health and fitness-related content on social media: a cross-sectional study. *J Med Internet Res*. 2015;17(8):e205. doi:10.2196/jmir.4803
23. Jerónimo F, Carraça EV. Effects of fitspiration content on body image: a systematic review. *Eat Weight Disord*. 2022;27(8):3017–3035. doi:10.1007/s40519-022-01505-4
24. Urgent responsibility to reduce harms posed by social media on risk for eating disorders: an open letter to Facebook, Instagram, TikTok, and Other Global Social Media Corporations. Available From: <https://www.newswise.com/articles/urgent-responsibility-to-reduce-harms-posed-by-social-media-on-risk-for-eating-disorders>. Accessed March 13, 2024.
25. Huddleston J Would new legislation actually make kids safer online? analyzing the consequences of recent youth online safety proposals. *Cato Institute Briefing Paper*. 2023;(150).
26. Marlatt GA, Witkiewitz K. Update on harm-reduction policy and intervention research. *Ann Rev Clin Psychol*. 2010;6(1):591–606. doi:10.1146/annurev.clinpsy.121208.131438
27. Hawk M, Coulter RW, Egan JE, et al. Harm reduction principles for healthcare settings. *Harm Reduct J*. 2017;14(1):1–9. doi:10.1186/s12954-017-0196-4
28. Hendlin YH, Vora M, Elias J, Ling PM. Financial conflicts of interest and stance on tobacco harm reduction: a systematic review. *Am J Public Health*. 2019;109(7):e1–e8. doi:10.2105/AJPH.2019.305106
29. Levengood TW, Yoon GH, Davoust MJ, et al. Supervised injection facilities as harm reduction: a systematic review. *Am J PrevMed*. 2021;61(5):738–749. doi:10.1016/j.amepre.2021.04.017
30. Kelly Y, Zilanawala A, Booker C, Sacker A. Social media use and adolescent mental health: findings from the UK millennium cohort study. *EClinical Med*. 2018;6:59–68. doi:10.1016/j.eclinm.2018.12.005
31. Massarat EAV Risa Gelles Watnick and Navid. Teens, social media and technology 2022. pew research center: internet, science & tech, 2024. Available from: <https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/>. August 10, 2022.
32. Zuair AA, Sopory P. Effects of media health literacy school-based interventions on adolescents’ body image concerns, eating concerns, and thin-internalization attitudes: a systematic review and meta-analysis. *Health Commun*. 2022;37(1):20–28. doi:10.1080/10410236.2020.1813954
33. McLean SA, Wertheim EH, Masters J, Paxton SJ. A pilot evaluation of a social media literacy intervention to reduce risk factors for eating disorders. *Int J Eating Disord*. 2017;50(7):847–851. doi:10.1002/eat.22708
34. Bell BT, Taylor C, Paddock D, Bates A. *Digital Bodies*: a controlled evaluation of a brief classroom-based intervention for reducing negative body image among adolescents in the digital age. *Br J Educ Psychol*. 2022;92(1):280–298. doi:10.1111/bjep.12449
35. Mahon C, Hevey D. Pilot trial of a self-compassion intervention to address adolescents’ social media-related body image concerns. *Clin Child Psychol Psychiatry*. 2023;28(1):307–322. doi:10.1177/13591045221099215
36. Kusina JR, Exline Julie J. Beyond body image: a systematic review of classroom-based interventions targeting body image of adolescents. *Adolesc Res Rev*. 2019;4(3):293–311. doi:10.1007/s40894-019-00121-1

37. Sundgot-Borgen C, Friborg O, Kolle E, et al. The healthy body image (HBI) intervention: effects of a school-based cluster-randomized controlled trial with 12-months follow-up. *Body Image*. 2019;29:122–131. doi:10.1016/j.bodyim.2019.03.007
38. Gordon CS, Jarman HK, Rodgers RF, et al. Outcomes of a cluster randomized controlled trial of the SoMe social media literacy program for improving body image-related outcomes in adolescent boys and girls. *Nutrients*. 2021;13(11):3825. doi:10.3390/nu13113825
39. Diedrichs PC, Atkinson MJ, Garbett KM, Leckie G. Evaluating the “Dove Confident Me” five-session body image intervention delivered by teachers in schools: a cluster randomized controlled effectiveness trial. *J Adolesc Health*. 2021;68(2):331–341. doi:10.1016/j.jadohealth.2020.10.001
40. Guest E, Jarman H, Sharratt N, et al. ‘everybody’s different: the appearance game’. A randomised controlled trial evaluating an appearance-related board game intervention with children aged 9–11 years. *Body Image*. 2021;36:34–44. doi:10.1016/j.bodyim.2020.09.010
41. Smolak, L, Cash, TF Cash TF, Smolak L Body Image: A Handbook of Science, Practice, and Prevention 2nd (New York: Guilford Press)2011. editors. Future challenges for body image science, practice, and prevention.. xxi, 490-xxi. 471–478
42. Yager Z, Diedrichs PC, Ricciardelli LA, Halliwell E. What works in secondary schools? A systematic review of classroom-based body image programs. *Body Image*. 2013;10(3):271–281. doi:10.1016/j.bodyim.2013.04.001
43. Lewis-Smith H, Garbett KM, Chaudhry A, et al. Evaluating a body image school-based intervention in India: a randomized controlled trial. *Body Image*. 2023;44:148–156. doi:10.1016/j.bodyim.2022.12.006
44. Garbett KM, Lewis-Smith H, Chaudhry A, et al. Acceptability and preliminary efficacy of a school-based body image intervention in urban India: a pilot randomised controlled trial. *Body Image*. 2021;37:282–290. doi:10.1016/j.bodyim.2021.02.011
45. Craddock N, Garbett KM, Haywood S, et al. ‘Dove Confident Me Indonesia: Single Session’: study protocol for a randomised controlled trial to evaluate a school-based body image intervention among Indonesian adolescents. *BMC Public Health*. 2021;21(1):2102. doi:10.1186/s12889-021-11770-0
46. Garbett KM, Haywood S, Craddock N, et al. Evaluating the efficacy of a social media-based intervention (Warna-Warni Waktu) to improve body image among young Indonesian women: parallel randomized controlled trial. *J Med Internet Res*. 2023;25(1):e42499. doi:10.2196/42499
47. Matheson EL, Smith HG, Amaral ACS, et al. Using chatbot technology to improve Brazilian adolescents’ body image and mental health at scale: randomized controlled trial. *JMIR Mhealth Uhealth*. 2023;11(1):e39934. doi:10.2196/39934
48. Garbett KM, Diedrichs PC. Improving uptake and engagement with child body image interventions delivered to mothers: understanding mother and daughter preferences for intervention content. *Body Image*. 2016;19:24–27. doi:10.1016/j.bodyim.2016.07.004
49. Loth KA, MacLehose R, Bucchianeri M, Crow S, Neumark-Sztainer D. Predictors of dieting and disordered eating behaviors from adolescence to young adulthood. *J Adolesc Health*. 2014;55(5):705–712. doi:10.1016/j.jadohealth.2014.04.016
50. Frederick DA, Sandhu G, Scott T, Akbari Y. Reducing the negative effects of media exposure on body image: testing the effectiveness of subvertising and disclaimer labels. *Body Image*. 2016;17:171–174. doi:10.1016/j.bodyim.2016.03.009
51. Cohen R, Newton-John T, Slater, A The case for body positivity on social media: Perspectives on current advances and future directions. *J Health Psychol*. 2021 26 13 2365–2373. doi:10.1177/1359105320912450
52. Rodgers RF, Wertheim EH, Paxton SJ, Tylka TL, Harriger JA. #Bopo: Enhancing body image through body positive social media- evidence to date and research directions. *Body Image*. 2022;41:367–374. doi:10.1016/j.bodyim.2022.03.008
53. Lazuka RF, Wick MR, Keel PK, Harriger JA. Are we there yet? Progress in depicting diverse images of beauty in Instagram’s body positivity movement. *Body Image*. 2020;34:85–93. doi:10.1016/j.bodyim.2020.05.001
54. Smith AC, Ahuvia I, Ito S, Schleider JL. Project body neutrality: piloting a digital single-session intervention for adolescent body image and depression. *Int J Eating Disord*. 2023;56(8):1554–1569. doi:10.1002/eat.23976
55. Wood-Barcalow NL, Tylka TL, Augustus-Horvath CL. “But I Like My Body”: Positive body image characteristics and a holistic model for young-adult women. *Body Image*. 2010;7(2):106–116. doi:10.1016/j.bodyim.2010.01.001
56. Tylka TL, Wood-Barcalow NL. What is and what is not positive body image? Conceptual foundations and construct definition. *Body Image*. 2015;14:118–129. doi:10.1016/j.bodyim.2015.04.001
57. Zavattaro SM. Taking the social justice fight to the cloud: Social media and body positivity. *Public Integrity*. 2021;23(3):281–295. doi:10.1080/1099922.2020.1782104
58. Afful AA, Ricciardelli R. Shaping the online fat acceptance movement: talking about body image and beauty standards. *J GenD Stud*. 2015;24(4):453–472. doi:10.1080/09589236.2015.1028523
59. Bacon L. *Health at Every Size: The Surprising Truth About Your Weight*. BenBella Books; 2010.
60. Cohen R, Shikora S. Fighting weight bias and obesity stigma: a call for action. *Obes Surg*. 2020;30(5):1623–1624. doi:10.1007/s11695-020-04525-0
61. Piran N. New possibilities in the prevention of eating disorders: the introduction of positive body image measures. *Body Image*. 2015;14:146–157. doi:10.1016/j.bodyim.2015.03.008
62. Cohen R, Irwin L, Newton-John T, Slater A. #bodypositivity: a content analysis of body positive accounts on Instagram. *Body Image*. 2019;29:47–57. doi:10.1016/j.bodyim.2019.02.007
63. Harriger JA, Evans JA, Thompson JK, Tylka TL. The dangers of the rabbit hole: reflections on social media as a portal into a distorted world of edited bodies and eating disorder risk and the role of algorithms. *Body Image*. 2022;41:292–297. doi:10.1016/j.bodyim.2022.03.007
64. Barron AM, Krumrei-Mancuso EJ, Harriger JA. The effects of fitspiration and self-compassion Instagram posts on body image and self-compassion in men and women. *Body Image*. 2021;37:14–27. doi:10.1016/j.bodyim.2021.01.003
65. Stevens A, Griffiths S. Body Positivity (#BoPo) in everyday life: an ecological momentary assessment study showing potential benefits to individuals’ body image and emotional wellbeing. *Body Image*. 2020;35:181–191. doi:10.1016/j.bodyim.2020.09.003
66. Ogden J, Gosling C, Hazelwood M, Atkins E. Exposure to body diversity images as a buffer against the thin-ideal: an experimental study. *Psychol Health Med*. 2020;25(10):1165–1178. doi:10.1080/13548506.2020.1734219
67. Rankin ST Portrait Positive: Changing the way you see. United Kingdom: Portrait Positive; 2018.
68. Burnette CB, Kwitowski MA, Mazzeo SE. “I don’t need people to tell me I’m pretty on social media.” A qualitative study of social media and body image in early adolescent girls. *Body Image*. 2017;23:114–125. doi:10.1016/j.bodyim.2017.09.001
69. Rodgers RF, Laveway K, Zalvino J, Cardone W, Wang L. #BodyPositive: a qualitative exploration of young people’s responses to body positive social media content. *Body Image*. 2023;47:101613. doi:10.1016/j.bodyim.2023.08.005

70. Rodgers RF, Paxton SJ, Wertheim EH. #Take idealized bodies out of the picture: a scoping review of social media content aiming to protect and promote positive body image. *Body Image*. 2021;38:10–36. doi:10.1016/j.bodyim.2021.03.009
71. Hendrickse J, Clayton RB, Ray EC, Ridgway JL, Secharan R. Experimental effects of viewing thin and plus-size models in objectifying and empowering contexts on Instagram. *Health Commun*. 2021;36(11):1417–1425. doi:10.1080/10410236.2020.1761077
72. Cohen R, Fardouly J, Newton-John T, Slater A. BoPo on Instagram: an experimental investigation of the effects of viewing body positive content on young women's mood and body image. *New Media Soc*. 2019;21(7):1546–1564. doi:10.1177/1461444819826530
73. Rees A. *Beyond Beautiful: A Practical Guide to Being Happy, Confident, and You in a Looks-Obsessed World*. Clarkson Potter/Ten Speed; 2019.
74. MA F. What if body positivity doesn't work? how about body neutrality? everyday feminism. 2016; Available from: <https://everydayfeminism.com/2016/02/body-positivity-vs-neutrality>. Accessed March 13, 2024.
75. Puhl RM, Heuer CA. The stigma of obesity: a review and update. *Obesity*. 2009;17(5):941–964. doi:10.1038/oby.2008.636
76. Sharp G, Gerrard Y. The body image “problem” on social media: novel directions for the field. *Body Image*. 2022;41:267–271. doi:10.1016/j.bodyim.2022.03.004
77. Costello N, Sutton R, Jones M, et al. ALGORITHMS, ADDICTION, AND ADOLESCENT MENTAL HEALTH: an interdisciplinary study to inform state-level policy action to protect youth from the dangers of social media. *Am J Law Med*. 2023;49(2–3):135–172. doi:10.1017/amj.2023.25
78. Danthinne ES, Giorgianni FE, Rodgers RF. Labels to prevent the detrimental effects of media on body image: a systematic review and meta-analysis. *Intl J Eating Disord*. 2020;53(5):647–661. doi:10.1002/eat.23242
79. Bury B, Tiggemann M, Slater A. Disclaimer labels on fashion magazine advertisements: impact on visual attention and relationship with body dissatisfaction. *Body Image*. 2016;16:1–9. doi:10.1016/j.bodyim.2015.09.005
80. Puhl RM. Weight stigma, policy initiatives, and harnessing social media to elevate activism. *Body Image*. 2022;40:131–137. doi:10.1016/j.bodyim.2021.12.008
81. Lessard LM, Puhl RM. Adolescents' exposure to and experiences of weight stigma during the COVID-19 pandemic. *J Pediatr Psychol*. 2021;46(8):950–959. doi:10.1093/jpepsy/jsab071
82. Robertson A. Court blocks California's online child safety law. *The Verge*. 2023; Available From: <https://www.theverge.com/2023/9/18/23879489/california-age-appropriate-design-code-act-blocked-unconstitutional-first-amendment-injunction>. Accessed March 13, 2024.

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