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# Facebook Photo Activity Associated with Body Image Disturbance in Adolescent Girls

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#### **Abstract**

The present study examined the relationship between body image and adolescent girls' activity on the social networking site (SNS) Facebook (FB). Research has shown that elevated Internet "appearance exposure" is positively correlated with increased body image disturbance among adolescent girls, and there is a particularly strong association with FB use. The present study sought to replicate and extend upon these findings by identifying the specific FB features that correlate with body image disturbance in adolescent girls. A total of 103 middle and high school females completed questionnaire measures of total FB use, specific FB feature use, weight dissatisfaction, drive for thinness, thin ideal internalization, appearance comparison, and self-objectification. An appearance exposure score was calculated based on subjects' use of FB photo applications relative to total FB use. Elevated appearance exposure, but not overall FB usage, was significantly correlated with weight dissatisfaction, drive for thinness, thin ideal internalization, and self-objectification. Implications for eating disorder prevention programs and best practices in researching SNSs are discussed.

# Introduction

**B**ODY IMAGE DECREASES significantly during adolescence, resulting in widespread body dissatisfaction and associated eating disturbances, particularly among adolescent females. Given the strong causal link between body image disturbance and eating disorders (EDs), it is important to identify factors that contribute to decreases in girls body satisfaction in order to improve prevention and early intervention efforts targeted to this highly vulnerable group.

# Media effects on body image

Research suggests that the media exerts sociocultural pressure on females to attain the Western "thin ideal" standard of beauty. Females internalize this thin ideal and compare their own bodies against it, which often leads to body dissatisfaction and a drive for thinness if or when they fail to meet this unrealistic standard. Studies suggest that the media may be the most powerful factor in this tripartite influence model and that it exerts more pressure on adolescent girls compared to boys.

The potential negative impact of media exposure on body image has garnered extensive research in past decades. Two meta-analyses of correlational and experimental studies<sup>11,12</sup> have reported small to moderate effect sizes for the relationship between various types of media exposure and

female body dissatisfaction, internalization of the thin ideal, and disturbed eating behaviors and beliefs. Experimental and correlational research consistently find a link between exposure to thin ideal content in TV and magazines, decreased body satisfaction, and eating disordered behavior in adolescent females<sup>13–18</sup> A common theme among findings is that the weight and appearance focus of the media content consumed is more relevant than overall media consumption or media type.

Research has also explored the mechanisms underlying the impact of media consumption on adolescent body image. Thin ideal media has been shown to increase females' internalization of the societal thin ideal 16,19 and their tendency to make appearance comparisons with others. Thin ideal internalization and appearance comparison are both significant predictors of body dissatisfaction. Dijectification theory proposes that the media's frequent sexual objectification of women trains females to self-objectify. Increased exposure to sexually objectifying media correlates with increased self-objectification in females, 19,22,23 and self-objectification is associated with increased body shame and disordered eating among adolescent females. 4

# The Internet and body image disturbance

The bulk of media effects research has focused on the impact of television and magazine exposure, and less is known

about how Internet use impacts body image. An increased focus on the effects of Internet exposure is warranted, given the rapid increase in Internet use among adolescents.<sup>25</sup> The rise in adolescent Internet use may in part be driven by the rapidly increasing popularity of social networking sites (SNSs) such as Facebook (FB). SNS use is now the most popular computer activity for 8 to 18 year olds.<sup>26</sup>

Researchers are just beginning to explore how Internet and SNS use may impact body image. Bair et al. reported a significant positive correlation between time spent on appearance-oriented websites and eating pathology among female college students.<sup>27</sup> A recent unpublished study at the University of Haifa reported a positive correlation between girls' use of FB and increased body dissatisfaction, urge to diet, negative approach to eating, and bulimic and anorexic symptomatology.<sup>28</sup> Tiggemann and Miller<sup>20</sup> found that adolescent girls' Internet "appearance exposure," measured by the amount of time spent on specific websites that had been precoded based on appearance focused content, was associated with greater internalization of the thin ideal, appearance comparison, weight dissatisfaction, and drive for thinness. Analysis on specific websites revealed a particularly strong correlation between time spent on the SNS FB and these body image disturbance variables.<sup>20</sup>

Findings linking FB use to body dissatisfaction and eating pathology are particularly troubling given the popularity of this SNS among adolescent girls, <sup>26</sup> but the nature of FB's impact on body image remains unclear. Studies <sup>20,28</sup> measuring total time on FB do not account for the diverse array of FB features available and the idiosyncratic nature of potential FB usage patterns. Critics of SNS research argue that these sites are not homogenous and therefore should be treated as collections of diverse tools and features. <sup>29</sup> Measuring FB use by total exposure time is uninformative, as user activity may vary widely in time spent posting photos, videos, status updates, chatting, private messaging, or using any of more than 10 million FB apps. <sup>30</sup>

Several recent studies have explored the relationship between specific FB activity and body image-related variables. Female college students who share more photos on FB report higher appearance-based contingencies of self-worth, and college students high in narcissism post more self-promotional content in their profile photos, status updates, and notes. Adolescents exposed to positive feedback on their FB profiles reported improved self-esteem, while negative feedback led to degraded self-esteem. Adolescent girls admit to portraying a version of themselves on an SNS that differs from reality, and self-esteem impacts the type of image girls present online. Although these studies do not address body image variables directly, they demonstrate the utility of measuring user interaction with specific FB features (sharing photos, status updates, etc.) rather than overall time spent on FB.

# The current study

The current study aims to extend upon Tiggemann and Miller's study<sup>20</sup> by identifying the specific FB features that are associated with body image disturbances in girls. The authors measured girls' Internet appearance exposure, but did not apply this coding scheme to FB use. In the current study, FB appearance exposure was measured by user activity dedicated to FB photos relative to overall use. Photo use

was measured relative to total FB use in order to avoid conflating high overall FB use (i.e., high frequency scores for all FB features) with an appearance-heavy FB usage pattern. It was hypothesized that girls' FB "appearance exposure" would correlate positively with body image disturbance, conceptualized as weight dissatisfaction, drive for thinness, appearance comparison, self-objectification, and thin ideal internalization.

H1: Higher total FB use will correlate with lower weight satisfaction and greater thin ideal internationalization, appearance comparison, drive for thinness, and self-objectification.

H2: Higher FB appearance exposure, operationalized by the use of photo-related features relative to overall FB use, will correlate with lower weight satisfaction and greater thin ideal internationalization, appearance comparison, drive for thinness, and self-objectification.

#### Method

### Participants and procedure

Participants were 103 adolescent female students between the ages of 12 and 18 years (M=15.4) recruited from a public middle/high school in New York State. Girls in the sample were predominately white (84.5%). Following approval by the American University International Review Board and school administration, information on the optional survey was posted in the school's online newsletter, and fliers were distributed in homerooms. Signed parental consent forms were required for minors. Students over the age of 18 granted informed consent.

Those interested signed up to complete the survey during a free period over the course of 1 week. Survey administration took place in students' study hall rooms and took approximately 20–30 minutes. All surveys began with the demographic questionnaire followed by the Facebook Questionnaire (FBQ). Body image measures were presented in randomized order to minimize sequencing effects. As a token of appreciation, girls were given the opportunity to be entered into a raffle for a \$150 clothing store voucher.

#### Measures

Demographics and body mass index. Participants reported age, grade level, height, weight, and race/ethnic group identification; the investigator calculated body mass index (BMI) using height and weight data.

Internalization of the thin ideal. The 5-item Sociocultural Internalization of Appearance Questionnaire for Adolescents (SIAQ—A)<sup>35</sup> was used to assess the extent to which adolescents adopt the media-presented appearance ideals for themselves. Response options range from 1="definitely disagree" to 5="definitely agree" and are summed. Higher scores indicate greater internalization. In the current sample, Cronbach's alpha was 0.919.

Appearance comparison. The Physical Appearance Comparison Scale (PACS)<sup>36</sup> was used to assess the tendency to compare one's own appearance to the appearance of others. Response options range from 1="never" to 5="always." An adjusted, 4-item version was used based on reports from studies

with adolescent samples<sup>8,20</sup> that removing one negatively worded, reverse-coded item (item 4) improves reliability to an acceptable level. In the current sample, Cronbach's alpha for the 4-item scale was 0.803.

Weight satisfaction. The 8-item Weight Satisfaction subscale of the Body-Esteem Scale for Adolescents and Adults (BES) $^{37}$  was used to assess how girls feel about their bodies/weight. Response options range from 0="never" to 4= "always." Higher scores indicate greater weight satisfaction. In the current sample, Cronbach's alpha was 0.935.

Drive for thinness. The 7-item Drive for Thinness subscale of the Eating Disorder Inventory<sup>38</sup> was used to assess subjects' pursuit of thinness and fear of being fat. Response options ranges from 1="never" to 6="always." Higher scores indicate a greater drive for thinness. In the current sample, Cronbach's alpha was 0.941.

Self-objectification. The 10-item Self-Objectification Questionnaire  $^{39}$  asks subjects to rank order 10 body attributes in order of how much impact each attribute has on their physical self-concept. Response options ranged from 0= "least impact" to 9="greatest impact." Five of the 10 body attributes are physical appearance based (e.g., physical attractiveness), and the other five body attributes are physical competence based (e.g., health). Scores are calculated based on the difference between the sum of the appearance rankings and the sum of the competence rankings and range from -25 to 25. Positive scores indicate a greater emphasis on appearance, which is interpreted as greater self-objectification.  $^{39}$ 

A number of subjects in the current sample did not adequately follow instructions in assigning a unique ranking value 0–9 (n=26). Typical response errors included using a 1–10 scale or assigning the same value to more than one attribute (e.g., ranking both "weight" and "physical attractiveness" as 9 [greatest impact]). Given the ipsative nature of the measure, the investigator determined that these scores still reflected the relative importance of each item and therefore handled these cases by shifting responses to fit the 0–9 scale where appropriate.

Total Internet and FB use. The FBQ was created by the authors to assess total Internet and FB use and FB appearance exposure (Appendix 1). Preliminary yes/no items asked if subjects have Internet access and a FB account. Participants indicated their typical Internet use from six categories, ranging from A="never/almost never" to F="3+hours/day." Next, FB account holders indicated their typical FB use from six categories, ranging from A="never/almost never" to F="2+hours/day." Response options were based on national averages for adolescent Internet and SNS use.  $^{25}$ 

FB appearance-related exposure. The FBQ assessed the frequency of user activity on specific FB features. A 24-item list of individual FB activities was compiled based on a list of popular features published on the FB help center  $^{40}$  (Table 1). Participants indicated their typical use of each FB feature on a 5-point scale, ranging from 1= "almost never or never" to 5= "nearly every time I log on." Based on pilot testing, floor effects were observed for nine items that may by nature have lower base frequency (e.g., Create a Group) compared to

Table 1. Facebook Questionnaire Items

Create an event

Create/share a Facebook Quiz

Create a photo album with photos of yourself and

friends/family

Create a photo album featuring artwork/photography

(photos of subjects other than yourself, friends, or family)

Join "groups"

Update your profile photo<sup>P</sup>

Update your profile interests (books, movies, TV, activities)

Use Facebook Chat

Play games (Farmville, etc.)

Send/receive private messages

Post a photo

Create a group

Write a Facebook note

Post a status update

Post a link to a news story, video, Web site, etc.

View friends' photos that they've added of your

View friends' photos of themselves

View friends' status updates

View friends' links to news stories, videos, Web sites, etc.

Comment on friends' photos<sup>1</sup>

Comment on friends' status updates

Comment on friends' links to news stories, videos, Web sites, etc.

Tag yourself in friends' photos<sup>P</sup> Untag yourself in friends' photos<sup>P</sup>

more casual, high base frequency activities (e.g., FB Chat). For these nine items, response options were adjusted to range from 1="almost never/never" to 5="more often than once a month." Individual item responses were summed to calculate the total FBQ score.

Eight activity items that involved photos (of self and friends) made up the photo subscale (PS). Frequency scores for these items were summed and divided by the overall FBQ score to create the appearance exposure score (AES). The AES represents users' photo-based activity relative to their overall FB activity. Cronbach's alpha was 0.874 for the total FBQ (n=24) and 0.817 for the PS (n=8).

# Results

Descriptive statistics for Internet and FB use are displayed in Table 2. Means and standard deviations for BMI and body image variables are displayed in Table 3. One-way Pearson correlations were run on all main variables. Given the known association between adolescent BMI and body dissatisfaction,<sup>41</sup> all hypotheses testing controlled for BMI.

# Relationship between body image disturbance and FB appearance exposure

Controlling for BMI, FB appearance exposure was positively correlated with internalization of the thin ideal, self-objectification, and drive for thinness, and negatively correlated with weight satisfaction (Table 4).

Relationship between body image disturbance, total FB use, and total Internet use

Contrary to predictions, no significant correlations were found for total FB use and any of the body image variables,

Photo Subscale (n=8).

TABLE 2. INTERNET AND FACEBOOK USE

	N	%
Internet access		
Yes	103	100
Internet usage		
Never/almost never	1	1.0%
>30 min/day	4	3.9%
30–60 min/day	20	19.4%
1–2 hr/day	37	35.9%
2–3 hr/day	21	20.4%
3+ hr/day	20	19.4%
Facebook account		
Yes	91	88.3%
No	12	11.7%
Facebook usage		
No account	12	11.7%
Never/almost never	5	4.9%
>1 hr/wk	9	8.7%
>30 min/day	11	10.7%
30–60 min/ďay	38	36.9%
1–2 hr/day	19	18.4%
2+ hr/day	9	8.7%

even when controlling for BMI. Similarly, no relationship was found for total Internet use and any of the body image variables (Table 4).

# Body image disturbance in FB users versus non-FB users

Independent samples t tests were conducted to compare body image disturbance in non-FB users and FB users. Participants that reported having no FB account (n=12) or using FB "never/almost never" (n=5) were joined to make up the "non-FB users" group (n=17). Participants that reported using FB at least one hour per week or more made up the "FB users" group (n=86).

Analysis revealed significant differences between non-FB users and FB users for age, t(101)=2.257, p=0.026; self-objectification, t(98)=2.215, p=0.029; and physical appearance comparisons, t(101)=2.338, p=0.021. FB users scored higher than nonusers on age (M=15.58, SD=1.86 for FB users; M=14.47, SD=1.81 for non-FB users); self-objectification (M=2.17, SD=12.85 for FB users; M=-5.59, SD=14.62

Table 3. Means and Standard Deviations for Body Image and Facebook Appearance Exposure

	M	SD	N
BMI	22.23	4.24	103
Internalization of thin ideal	15.15	5.62	103
Appearance comparison	11.78	3.62	103
Weight satisfaction	17.34	7.88	102
Self-objectification	0.85	13.41	100
Drive for thinness	22.77	10.30	103
Appearance exposure score	0.40	0.05	89

N=103. Internalization range=5–25; appearance comparison range=4–20; weight satisfaction range=0–32; drive for thinness range=0–32; self-objectification range=-25–25; appearance exposure range=0–1.0.

for non-FB users); and physical appearance comparison (M=12.14, SD=3.58 for FB users; M=9.94, SD=3.36 for nonusers).

#### **Discussion**

The present study aimed to update the media effects literature by exploring how FB use may influence adolescent girls' body image. Results suggest that it is not the total time spent on FB or the Internet, but the amount of FB time allocated to photo activity that is associated with greater thin ideal internalization, self-objectification, weight dissatisfaction, and drive for thinness. Results are consistent with traditional media effects research findings that exposure to specific TV and magazine genres predicted body dissatisfaction when total media consumption did not.3,12 Given the correlational nature of the study, causality cannot be established, but it seems likely that there is a bidirectional relationship whereby adolescents with high thin ideal internalization and body dissatisfaction are driven to interact more heavily with photorelated FB features, and this frequent appearance-related activity acts to reinforce or exacerbate existing body image issues. Research on traditional media forms has shown that girls with poor body image and eating disturbances seek out media featuring thin ideal images. 42 Future research should use experimental and longitudinal methods to test if preexisting body image disturbances drive users to use appearance-related SNS features more heavily.

Appearance-related FB exposure was positively correlated with self-objectification, a pattern that has been found for exposure to traditional media including beauty magazines<sup>19</sup> and sexually objectifying TV.<sup>22</sup> Self-objectification theory describes a two-step process where females are trained to objectify females in the media and then transfer this pattern inwards by taking an outsider's perspective on the physical self.<sup>22</sup> The nature of FB photo sharing may expedite this process. Taking an outsider's perspective on the physical self is by definition the very purpose of publicly sharing photos on FB, and often the outsider's perspective is explicitly provided in the form of "likes" or comments.

Though FB appearance exposure may parallel traditional media in some ways, it is also a communication platform for adolescent peer groups, and may serve as host to the many peer influences known to impact adolescent body image. FB photo applications provide a digitalized platform for the real life "appearance conversations" that have traditionally taken place among peers in school hallways and cafeteria and are associated with body dissatisfaction and thin ideal internalization. <sup>43</sup>

In contrast to Tiggemann and Miller's findings, <sup>20</sup> higher overall FB use did not correlate with higher body image disturbance. This may be in part due to substantial differences in FB's popularity within the 2012 U.S. sample compared to the 2008 Australian sample (88.5% and 41.8% have a FB account respectively). While medium to heavy FB use is now fairly normal among American teens, FB was not the predominant SNS among Australian teens in 2008. <sup>44</sup> FB users in the Australian sample could be considered early adopters who may have differed from nonusers on a range of characteristics. Additionally, FB itself has changed dramatically from 2008 to 2012, and currently offers a substantially larger and more diverse array of applications. Increasingly

Table 4. Pearson's Correlation Coefficients for Body Image Disturbance Variables and BMI, Total Internet Use,
Total Facebook Use, Facebook Appearance Exposure, Controlling for BMI

	Internalization	ternalization Weight satisfaction Self-objectification Appearance comparison		Drive for thinness	
Total Internet use Total Facebook use	0.154 0.122	-0.016 $-0.036$	0.056 0.155	0.038 0.173	$-0.080 \\ 0.074$
Appearance exposure	0.358***	-0 <b>.227*</b>	0.286***	0.168	0.271**

Correlation is significant at the \*\*\*0.005 level (one-tailed); \*\*0.01 level (one-tailed); \*0.05 level (one-tailed).

heterogeneous usage patterns may explain our failure to replicate Tiggemann and Miller's correlation between total FB use and body image disturbance, <sup>20</sup> underscoring the necessity of measuring specific FB features rather than total usage time.

Exploratory analyses comparing FB users and non-FB users as groups revealed that FB users scored significantly higher on self-objectification and physical appearance comparison. In contrast to findings from correlation testing, this suggests that overall FB use does not have a continuous, dose dependent effect on body image disturbance; rather, differences emerge when assessing FB use at the categorical "use" or "do not use" level. Causation cannot be inferred, and it is possible that spending any time on FB acts to increase girls' tendency to self-objectify and make physical appearance comparisons, or girls with these preexisting tendencies may be more likely to use FB for any extent of time.

This study's findings have several practical implications. Parents and clinicians should be aware of adolescents' general activity patterns on FB and other SNSs, as heavy use of FB photo applications may magnify the already intense pressure placed on girls to be thin, which could contribute to body image disturbance or more serious pathology. School and community-based prevention programs have been developed in the interest of improving adolescent body image. Future iterations of these programs should include consideration of how FB use may play a role in the overarching appearance culture and should encourage teens to self-regulate the amount of time spent interacting with FB photos.

This study also contributes to the ongoing process of identifying strategies to study media effects in the rapidly changing media landscape. The findings highlight the importance of measuring specific user activity on FB and other websites. FB usage patterns are heterogeneous, <sup>29</sup> and assessing correlations with total time may miss important phenomena. By measuring users' activity on specific features, we can make observations that maintain their meaning over time despite rapid changes in website content and structure. Furthermore, the contradicting findings produced by different analytic procedures (correlation vs. group mean comparison) highlights the importance of clarifying whether media exerts its effects in a linear fashion, or if the relationship is only detected when comparing groups more broadly (i.e., "exposure" vs. "no exposure").

Findings should be understood in the context of several limitations. A convenience sample of volunteers was used, and subjects were predominantly Caucasian and of middle socioeconomic status. The correlational design of the present study prevents any inferences on causation, and future studies using longitudinal, experimental, or content analysis designs may shed useful insight on causality. All data collected were self-report, which may suffer from memory recall

issues and a possible social desirability bias. The current study's definition of "appearance-related FB exposure" was limited to activity involving photos, but there are potentially other appearance-related FB features that could be included (i.e., visiting a fashion company Fan Page). Finally, the current sample was limited to adolescent females based on their heightened vulnerability, but future research should explore the impact of FB appearance exposure in males, adults, and members of various racial/ethnic groups.

In conclusion, these findings are a step toward advancing the body image media effects literature to include consideration of SNS use. Although the interactive and idiosyncratic nature of SNSs presents unique research challenges, these sites are increasingly becoming a predominant medium among adolescents, and their impact should not be ignored. By measuring user activity on specific FB features, this study demonstrates how approaching FB and other SNSs with a more granular approach provides important insight that cannot be detected when looking at overall usage time.

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# **Appendix**

## **Appendix 1: Facebook Questionnaire**

Please circle the appropriate answer to each question.

1. Do you have daily Internet access available (at home, school, workplace, etc.?)

Yes/No

If you answered yes to question 1, please continue on to the next questions. If you answered no, please skip the remainder of the Internet and Social Networking Site Questionnaire and move on to page 5.

- 2. On average, how frequently do you use the Internet (outside of instructor-led classroom activities, on any device—desktop, laptop, tablet, mobile phone, etc.)?
  - a. Never/almost never
- d. 1-2 hours per day
- b. Less than ½ hour per day
- e. 2-3 hours per day
- c. ½-1 hour per day
- f. More than 3 hours per day
- 3. Do you have an active Facebook account?

Yes/No

If you answered yes to question 3, please continue on to the next question. If you answered no, please skip the remainder of the Internet and Social Networking Site Questionnaire and move on to page 5.

Approximately how long have you had an active Facebook account?

- 4. In a typical week, how frequently do you use Facebook (on any device)? While daily time spent may vary, please estimate daily use as an average across the week.
  - a. Never/almost never
- d. Between ½ hour and 1 hour per day
- b. Less than 1 hour per week
- e. 1-2 hours per day
- c. Less than ½ hour per day
- f. More than 2 hours per day
- 5. Your privacy settings are currently set to:
  - a. Public
  - b. Private
  - c. Custom
  - d. I don't know
- 6. Approximate number of current Facebook friends

# 7. Approximate number of photos of you on Facebook

# 8. Your current Facebook Profile photo is best described as:

- a. A photo of just me, waist and above visible
- b. A photo of just me, full body visible
- c. A photo of me and friend(s), waist and above visible
- d. A photos of me and friend(s), full body visible
- e. A photo image of a person other than me
- f. A photo/image with no people in it
- g. Other/I don't know

## Please mark an X in the box that best fits approximately how often you do the following on your Facebook account:

More often	On average,		A few	Almost	
than once	about once	Every few	times	never or	I don't
a month	a month	months	a year	never	know
5	4	3	2	1	0

- 9. Create an event
- 10. Create a group
- 11. Write a Facebook Note
- 12. Create/share a Facebook Quiz
- 13. Create a photo album with photos of yourself and friends/family<sup>a</sup>
- 14. Create a photo album featuring artwork/photography (photos of subjects other than yourself, friends, or family)
- 15. Join "groups"
- 16. Update your profile photo<sup>a</sup>
- 17. Update your profile interests (books, movies, TV, activities)

# Please mark an X in the box that best fits approximately how often you do the following activities when visiting Facebook:

N	learly					
e	very					
ti	ime I		Once		Almost	Don't
lo	og on	Often	in a while	Rarely	never	know
	5	4	3	2	1	0

- 18. Use Facebook Chat
- 19. Play games (Farmville, etc.)
- 20. Send/receive private messages
- 21. Post a photo<sup>a</sup>
- 22. Post a status update
- 23. Post a link to a news story, video, Web site, etc.
- 24. View friends' photos that they've added of you<sup>a</sup> 25. View friends' photos of themselves<sup>a</sup> 26. View friends' status updates

- 27. View friends' links to news stories, videos, Web sites, etc.
- 28. Comment on friends' photos<sup>a</sup>
- 29. Comment on friends' status updates
- 30. Comment on friends' links to news stories, videos, Web sites, etc.
- 31. Tag yourself in friends' photos<sup>a</sup>
- 32. Untag yourself in friends' photos<sup>a</sup>

<sup>&</sup>lt;sup>a</sup>Appearance-related score (n=8).