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# NetTweens: The Internet and Body Image Concerns in Preteenage Girls

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## Abstract

The aim of the study was to examine the relationship between media exposure and body image concerns in preteenage girls, with a particular focus on the Internet. A sample of 189 girls (aged 10-12 years) completed questionnaire measures of media consumption and body image concerns. Nearly all girls (97.5%) had access to the Internet in their home. Time spent on-line was significantly related to internalization of the thin ideal (as was time reading magazines and watching television), body surveillance, reduced body esteem, and increased dieting. In accord with the sociocultural model, internalization mediated the effect of the Internet on body image concerns. Further, 14% of the girls had a MySpace profile and 43% had a Facebook profile. Time spent on these social networking sites produced stronger correlations with body image concern than did overall Internet exposure. It was concluded that the Internet represents a potent sociocultural force among preteenage girls.

## Keywords

Internet, media exposure, body image, preadolescents, internalization of thin ideals, social networking sites, Facebook

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## **Introduction**

Widespread body dissatisfaction among adult women and adolescent girls, particularly with body shape and weight, has been well documented in many studies. Although earlier research targeted adolescence as the most likely time for the emergence of body concerns, a growing body of research has suggested that such concerns may develop earlier, in the preteenage years. For example, in their review of girls' body image, Wertheim, Paxton, and Blaney (2008) reported estimates of between 40% and 50% for the number of preadolescent girls wishing to be thinner. Further, as is the case with adult and adolescent women, preadolescent body dissatisfaction has been implicated as a precursor for subsequent dieting, disordered eating, obesity, and reduced self-esteem (Smolak & Thompson, 2008; Wertheim et al., 2008).

Sociocultural models have provided the most widely accepted framework for understanding contemporary body dissatisfaction and disordered eating (e.g., Tiggemann, 2011). This account contends that the current very thin beauty ideal for women is societally reinforced and transmitted by a number of sociocultural influences, of which the media are the most pervasive and powerful. Although impossible for most women and girls to achieve by healthy means, this ideal is nevertheless internalized by many, and is itself a demonstrated causal risk factor for subsequent body dissatisfaction and disordered eating (Thompson & Stice, 2001).

In support of the sociocultural model, an extensive body of correlational research has demonstrated links between media consumption of various kinds and body dissatisfaction or disordered eating. In particular, two different meta-analytic reviews (Grabe, Ward, & Hyde, 2008; Levine & Murnen, 2009) have concluded that naturally occurring media exposure is associated with increased levels of internalization, body dissatisfaction, and disordered eating symptomatology, with a small-to-moderate effect size. Levine and Murnen (2009) also noted that effect sizes were larger for girls (under 18 years) than for adult women.

Nevertheless, very few studies of media exposure have been conducted with preadolescent girls, perhaps as a result of the belief that parental influences are more critical at this stage (Tiggemann, 2012). Grabe et al.'s (2008) listing contains only two published correlational studies (Dohnt & Tiggemann, 2006; Sands & Wardle, 2003) of media exposure in preteenage girls (sample mean age less than 13 years). In one, Sands and Wardle (2003) found that appearance magazine exposure was related to internalization of the thin ideal and body dissatisfaction among 9-12-year-old girls. In the same age group, Clark and Tiggemann (2007) have likewise found relationships between appearance magazine and television exposure and body dissatisfaction and

dieting, while Clark and Tiggemann (2006) found an indirect relationship with body dissatisfaction via peer appearance conversations. In younger girls (7-9 years), Anschutz, Engels, Van Leeuwe, and van Strien (2009) found watching soap operas and music television was associated with higher body dissatisfaction and restrained eating, while Dohnt and Tiggemann (2006) found that music videos and reading teen or women's magazines were related to dieting awareness among 5-8-year-old girls. Thus, it seems likely that the mass media do play a role in the body image concerns of 10-12-year-old girls, the focus of the present study.

Another limitation of the existing research is that every single study included in the above two meta-analyses assessed either fashion magazines or television watching (or both). While Australian youth, like their counterparts elsewhere, are high consumers of these media, they are also increasingly using other forms of electronic media, most notably the Internet. The Australian Bureau of Statistics (ABS) reports that 91% of Australian households with children less than 15-years old have access to a home computer, and that 12-14-year-olds spend an average of 1 hour and 32 minutes online per day, while 8-11-year-old children spend 30 minutes per day (ABS, 2011). Although young people use the Internet for a variety of purposes, there is no doubt that there are a wide range of Internet sites with an appearance focus. These include health, beauty, teen magazine, clothing, and celebrity sites. Two content analyses of teen websites have concluded that these disseminate similar stereotypical ideals of female beauty as their print counterparts, in their content (Labre & Walsh-Childers, 2003) and associated advertising (Slater, Tiggemann, Hawkins, & Werchon, 2012). In addition, Custers and Van den Bulck (2009) reported that 12.6% of their sample of adolescent girls had visited a pro-ana [pro-anorexia] website, a behavior associated with greater drive for thinness.

However, to our knowledge, only one study has investigated the overall relationship between Internet exposure and body image concerns. In a small sample of adolescent girls (13-18 years;  $\bar{X} = 14.9$  years), Tiggemann and Miller (2010) reported that Internet exposure was correlated with greater internalization of thin ideals, appearance comparison, weight dissatisfaction, and drive for thinness. More detailed analysis of specific sites indicated that there were no relationships with time spent on YouTube, Google, or MSN, but that time spent on Facebook, and to a lesser extent MySpace, was related to body image concerns. The authors suggested that such social networking sites, in which users create a public persona on-line (typically including photos of themselves), have the potential to arouse appearance and self-presentation concerns, as well as provide increased opportunity for social comparison on the basis of appearance.

Although in Australia the transition from primary school to high school (around age 13) is seen as the major driver for increased Internet use (Australian Communications and Media Authority, 2008), it is nevertheless clear from the statistics that preteenage children are also increasingly using the Internet. For example, the average age of first Internet use among online young Australians is 8.03 years (Australian eGeneration Report, 2007). Hence, they may be exposed to the same appearance-focused messages as their teenage counterparts. Furthermore, while MySpace and Facebook have legal age limits (14 and 13 years, respectively), younger girls can (and do) circumvent these (ABS, 2011).

Thus the aim of the present study was to investigate the relationship between Internet exposure and body image concerns in a group of upper primary school girls. This association was compared with those for the more traditional media forms of fashion magazines and television. The major prediction was that amount of Internet exposure would be positively correlated with body image concerns in 10-12-year-old preteenage girls, just as is the case for teenage girls. In addition, although theoretically this age group is too young to access MySpace or Facebook, the relationship with time spent on these social networking sites was also explored. Finally, the sociocultural model's prediction that media effects on body image will be mediated by internalization of the thin ideal was tested for Internet use.

## Method

### Participants

Participants were 189 girls aged between 10 and 12 years, with a mean age of 11.5 years ( $SD = 0.5$ ). They were recruited from the last 2 years of primary school (Years 6 and 7) at eight Catholic primary schools (1 single-sex, 7 co-ed) in metropolitan Adelaide, the capital city of South Australia. The schools cover a wide range of socioeconomic status, as indicated by the girls' Index of Relative Socioeconomic Disadvantage (based on postcode; ABS, 2008; decile range = 1-10,  $\bar{X} = 5.76$ ,  $SD = 2.86$ ). A language other than English was regularly spoken in 18.0% of homes, with the most common languages being Italian (4.8%), followed by Vietnamese (2.6%).

### Procedure

Following the procedure approved by the Institutional Research Ethics Committee, a Letter of Introduction outlining the study and accompanying consent form was sent home to parents via their daughters. Of these, 66.7%

were returned. Consent was not given by 3.7% of parents, making an overall participation rate of 63.0%.

The questionnaire, titled "NetTweens," contained measures of media exposure and four different measures of body image concerns, designed to be suitable for preadolescent girls. It was administered at school in small groups during normal class time and took approximately 30 minutes to complete. Before starting, girls also signed their own assent to participate.

## Measures

**Magazine and television exposure.** Following Clark and Tiggemann (2006), participants were provided with a list of 15 popular girls' magazines available at the local news agency and based on current readership ratings (Roy, 2010), including teen magazines such as *Dolly* and preteen magazines such as *Total Girl*, plus generic Women's (e.g., *Women's Day*) and Fashion (e.g., *Vogue*, *Cleo*) magazine categories. Girls rated how often they read each of the magazines on a 3-point scale: *never* (0), *sometimes* (1), or *almost every time it comes out* (2). Participants were also given the opportunity to list two other magazines that they read. Total magazine exposure scores were calculated by summing the frequencies. In addition, teen magazine exposure was calculated as the sum of frequencies for the teen magazines *Dolly* plus *Girl-friend* plus Fashion magazines.

Similarly, participants were asked to indicate how frequently (*never*, *sometimes*, *almost every time it's on*) they watched a list of 16 television programs derived from current television ratings for adolescent girls (OzTAM, 2009) and four general categories of program: Award shows, Music video shows (*Video Hits* or *Rage*), News, and Sports. Total television exposure was calculated as the sum of the frequencies for all shows, and teen television exposure as the sum of particular shows targeted at teens (*Gossip Girl*, *Bluewater High*, *Heartbreak High*, *Video Hits*, or *Rage*).

**Internet exposure.** A number of questions about Internet usage were developed. First, participants were asked general questions about access in their homes and ownership of computers. Second, they reported how long on average they spent on the Internet each day (not for homework) during the week and on the weekend separately (*none*, *30 minutes or less*, *about 1 hour*, *about 2 hours*, *about 3 hours*, *about 4 hours*, *about 5 hours*, *6 hours or more*). Third, they were also asked to list their three favorite websites and to indicate whether or not their parents set rules about when or what they could look at on the Internet.

In the final section, girls were asked whether or not they had a MySpace profile, and if so, how much time they spent on MySpace, whether their

profile was public or private (or “don’t know”), and approximately how many “friends” they had. These questions were repeated for Facebook, and in addition they were asked to list any other social network sites that they used.

**Internalization.** Internalization of the thin ideal was assessed by the Sociocultural Internalization of Media Ideals Scale of Jones, Vigfusdottir, and Lee (2004) designed for adolescent girls. This brief 7-item measure assesses the extent to which girls adopt as goals for themselves the media-presented ideals (e.g., “I wish I looked like a model”). Jones et al. (2004) showed high internal consistency in a sample of early adolescent girls ( $\alpha = .90$ ). Following Clark and Tiggemann (2006), responses here were simplified to a 3-point Likert scale (*no* [0], *sometimes* [1], *yes* [2]) and then summed. Although internal consistency was adequate ( $\alpha = .78$ ), it improved considerably when the one reverse-coded item (Item 3) was removed ( $\alpha = .85$ ), and so analyses were conducted without this item. Possible scores range from 0 to 12, with higher scores indicating greater internalization of appearance ideals.

**Body surveillance.** Body surveillance was assessed by the Body Surveillance Scale of the Objectified Body Consciousness Scale—Youth (Lindberg, Hyde, & McKinley, 2006). This brief 4-item scale measures body focus or the extent to which girls think about their body more in terms of how it looks than how it feels (e.g., “During the day, I think about how I look many times”). Responses are made on a 7-point Likert scale from *strongly disagree* (1) to *strongly agree* (7). Thus, total scores range from 4 to 28, with higher scores indicating a greater focus on the appearance of the body. Lindberg et al. (2006) have used the scale successfully with 10-12-year-olds and reported high internal consistency in this age group ( $\alpha = .88$ ). In the present sample, internal reliability was similarly high ( $\alpha = .85$ ).

**Body esteem.** Body esteem was assessed by the Body Esteem Scale for Children of Mendelson and White (1993). This 20-item scale assesses body satisfaction or dissatisfaction among children (e.g., “I’m pretty happy about the way I look,” “There are lots of things I’d change about my looks if I could”). Responses are on a 3-point scale (*no* = 0, *sometimes* = 1, *yes* = 2), with totals ranging from 0 to 40, scored in the direction of increasing body esteem. Mendelson and White report good internal consistency ( $\alpha = .88$ ) in a sample of girls and boys aged 8-16 years.

In the present sample, the scale had high internal reliability ( $\alpha = .93$ ).

**Dieting.** Following Clark and Tiggemann (2007), three simple questions were used to ask about dieting behavior and status. The first two (“Do you watch

exactly what you eat?" "Do you try to eat less at meal times than you would like to eat?") had three response options *no* (0), *sometimes* (1), and *yes* (2). The final question asked directly "Have you ever been on a diet to lose weight?" (*no* [0], *yes—but not now* [1], *yes—right now* [2]). Responses to the three items were summed. Internal reliability for this measure ( $\alpha = .52$ ) was considered adequate for a scale with few items, as indicated by the mean inter-item correlation of .27 (optimum  $.2 < r < .4$ ; Briggs & Cheek, 1986).

## Results

### *Magazine and Television Consumption*

The girls were well connected with media in general. For example, the mean number of televisions per household was 3.3 ( $SD = 1.5$ ). In addition, 56% had their own mobile phone, 49% their own computer or laptop, 52% their own game console, and 84% their own iPod (or equivalent). More than a third had a television or computer (both 38%) in their own bedroom.

By far the most popular magazines, defined as those read by girls "every time it comes out," were the teen magazines *Girlfriend* (25%) and *Dolly* (20%), followed by the preteen magazine *Total Girl* (10%). No "other" magazine was mentioned more than four times. Nearly all the specific television shows were well subscribed, with the majority being watched at least "sometimes" by the girls. The most popular shows ("almost every time it's on") were *Glee* (55%), *Masterchef* (41%), *Neighbors* (32%), *So You Think You Can Dance* (30%), and *The Simpsons* (29%).

### *Internet Exposure and Social Networks*

The overwhelming majority of girls (97.4%) had access to the Internet in their home. Over a third (37.6%) had access to the Internet in their own bedroom. They indicated that their median Internet use (not for homework) was "about 1 hour" each day for during the week and on the weekend, although mean use was a little higher on the weekend (1.71 hours) than on a week day (1.67 hours). As these two indicators were highly correlated ( $r = .62, p < .001$ ), they were averaged to obtain a single measure of Internet usage. Not surprisingly, Internet use was higher for those who had access to the Internet in their own bedroom ( $\bar{X} = 2.43, SD = 1.55$ ) compared with those who had access only in their home ( $\bar{X} = 1.29, SD = 1.09$ ),  $t(180) = 5.84, p < .001, d = .87$ . Their favorite self-reported websites were Facebook ( $n = 67$ ), YouTube ( $n = 47$ ), and MSN ( $n = 36$ ), with no other websites being consistently reported. Barely the majority (55%) indicated that their parents set rules about what or when they could look



**Table 1.** Correlations Between Time Spent on Magazines, Television, the Internet and the Social Networking Sites of MySpace and Facebook, and Body Image Concerns.

	Internalization of thin ideal	Body surveillance	Body esteem	Dieting behavior
Magazines—total	.23**	.17*	-.08	.18*
Teen	.33***	.32***	-.18*	.11
Television—total	.21**	.14	-.10	.11
Teen	.22**	.17*	-.16*	.16*
Internet—total	.21**	.32***	-.20**	.20**
Social networking sites	.32***	.34***	-.27***	.31***

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

at the Internet; 45% of parents did not. Internet use was lower for those whose parents did set rules ( $\bar{X} = 1.48$ ,  $SD = 1.21$ ) compared with those who did not ( $\bar{X} = 1.95$ ,  $SD = 1.53$ ),  $t(182) = 2.32$ ,  $p < .05$ ,  $d = .34$ .

Of the sample, 14.3% reported that they had a MySpace profile. These girls spent an average of 34.1 minutes ( $SD = 51.4$ ) on it per day. While 53.8% reported that their profile was set to Private, 19.2% were Public and 26.9% responded “don’t know.” They had an average of 58.2 ( $SD = 117.3$ ) MySpace “friends.” Many more (42.6%) had a Facebook profile, and spent an average of 1.5 hours ( $\bar{X} = 90.7$  minutes,  $SD = 89.1$ ) on Facebook daily. Most profiles (73.4%) were private, although 16.5% were public and 10.1% did not know. They had an average of 131.1 ( $SD = 109.1$ ) “friends.” The only other social network site listed with any frequency was MSN, which enables instant messaging, but has no visual component.

### *Relationship Between Media Exposure and Body Image Concerns*

To test the major prediction, correlations between media exposure (total magazines, teen magazines, total television, teen television, the Internet) and body image concern measures were calculated. The resulting correlation coefficients are presented in Table 1. Due to their large number, the significance level was set at .01 for these correlations. It can be seen that all forms of media exposure were significantly correlated with some aspect of body image concerns. In particular, magazine and television exposure were positively correlated with internalization of the thin ideal and, in the case of teen magazines, body surveillance. Of most relevance here, total Internet

**Table 2.** Mean (*SD*) Scores on Body Image Concerns for Facebook Users and Nonusers.

	Facebook		<i>t</i> value	Cohen's <i>d</i>
	Users ( <i>n</i> = 80)	Nonusers ( <i>n</i> = 109)		
Internalization of thin ideal	3.57 (3.69)	2.15 (2.69)	3.04*	.45
Body surveillance	15.88 (6.12)	12.29 (6.30)	3.74**	.58
Body esteem	23.59 (9.37)	27.79 (8.82)	3.11*	.47
Dieting behavior	5.13 (1.59)	4.39 (1.23)	3.51**	.53

\* $p < .01$ . \*\* $p < .001$ .

exposure was significantly correlated with all four measures of body image concern. Thus the major hypothesis has been confirmed.

To examine the impact of social networking sites in particular, the time spent on MySpace and/or Facebook per day was totaled for the whole sample. As can also be seen in Table 1, this was more strongly correlated positively with internalization, body surveillance, and dieting, and negatively with body esteem than total Internet exposure.

More detailed examination (Table 2) of specifically Facebook users ( $n = 80$ ) showed that they scored significantly higher on internalization, body surveillance, and dieting, and lower on body esteem (all  $ps < .01$ ; medium effect size) than their nonuser counterparts. As they also scored higher on overall Internet usage (users  $\bar{X} = 2.25$ ,  $SD = 1.49$ ; nonusers  $\bar{X} = 1.30$ ,  $SD = 1.18$ ),  $t(184) = 4.81$ ,  $p < .001$ ,  $d = .71$ , the present results might be driving the earlier correlations for Internet exposure. Among the subsample of Facebook users, time spent per day on Facebook was correlated with internalization,  $r = .24$ , body surveillance,  $r = .28$ , body esteem,  $r = -.24$ , and dieting,  $r = .25$  (all  $ps < .05$ ). Number of Facebook friends was also significantly correlated with dieting,  $r = .27$ ,  $p < .05$ . The public or private nature of their profile was not related to any body image variable (all  $ps > .10$ ).

### *Internalization as a Mediator Between Internet Exposure and Body Image Concerns*

The sociocultural model proposes that internalization of the thin ideal mediates the relationship between media exposure and body image concerns. This was tested here for specifically the Internet. Baron and Kenny (1986) outline three preconditions for testing mediation: The predictor variable (here Internet exposure) must be significantly related to both (a) the outcome

variable and (b) the potential mediating variable (here internalization), and (c) the mediating variable must be significantly associated with the outcome variable. Table 1 indicates that the first two preconditions were satisfied for all outcome variables. In addition, internalization was significantly correlated with body surveillance,  $r = .62$ , body esteem,  $r = -.46$ , and dieting,  $r = .46$  (all  $p < .001$ ). Thus, internalization could be tested as a potential mediator of the relationships between Internet exposure and all outcome variables.

In order for mediation to be established, the effect of the predictor variable on the outcome variable must be less when the mediator is entered in the regression equation than when the predictor is entered on its own. The regression analysis to predict body surveillance indicated that the initial relationship with Internet exposure ( $\beta = .32, p < .001$ ) was reduced, but still remained significant ( $\beta = .22, p < .001$ ), when internalization was included in the equation. For body esteem, however, the initial effect of Internet exposure ( $\beta = -.20, p < .01$ ) was reduced to nonsignificance ( $\beta = -.11, p > .05$ ) when internalization was included. This was also the case for dieting (initial  $\beta = .20, p < .01$ , reduced to  $\beta = .11, p > .05$ ). Sobel tests showed that the reductions were statistically significant in all cases (body surveillance  $z = 2.75, p < .01$ ; body esteem  $z = 2.62, p < .01$ ; dieting  $z = 2.61, p < .01$ ). Thus, the relationships between Internet exposure and body esteem and dieting behavior were fully mediated by internalization of the thin ideal, while the relationship with body surveillance was partially mediated.

## Discussion

The present study extends previous literature in a number of different ways. First, it contributes to the scant literature on (traditional) media exposure and body image in preteenage girls. It demonstrates that teen magazines and selected genres of television are related to some body image concerns in 10-12-year-old girls, consistent with the previous few findings for this age group (Clark & Tiggemann, 2007; Sands & Wardle, 2003). Second, it extends previous research on media effects by examining the influence of the Internet on preteen girls' body image. To our knowledge, this represents only the second attempt to investigate "new" media as a potential source of appearance ideals and weight concerns in this way, and the first with preteen girls. The major finding was that, as predicted, Internet exposure was associated with internalization of the thin ideal, body surveillance, dieting, and reduced body esteem. This finding replicates Tiggemann and Miller's (2010) previous result for adolescent girls, but in a younger age group. It also confirms the Internet as an additional form of media associated with body image concerns, with a similar effect size (small to moderate) as reported for television and

magazines (Grabe et al., 2008; Levine & Murnen, 2009). Finally, in accord with the predictions of the general sociocultural model (e.g., Tiggemann, 2011), the effects of the Internet on body surveillance, body esteem, and dieting were found to be largely mediated by internalization of the thin ideal. Thus, the sociocultural model holds for the Internet in much the same way as it does for the more traditional forms of media.

It is clear that the present sample of preteenage girls have easy access to the Internet, with only five girls not having Internet access in their homes. Around 90% used the Internet on average on a daily basis. The median time spent online (excluding for homework) of about 1 hour is consistent with current statistics for young Australians (ABS, 2011). More surprising, however, was the large number of girls accessing social networking sites, particularly Facebook. Despite the fact that the girls were definitionally too young (all were < 13 years), 43% had their own Facebook profile. Still others may have accessed the site without having their own current profile. In addition, these girls spent a considerable amount of time, more than 1.5 hours per day, on Facebook. Unfortunately, this does not seem a benign activity with respect to body image. Facebook users scored significantly higher on all indicators of body image concern than their nonuser counterparts. In addition, across the whole sample, time spent on the social networking sites of MySpace and Facebook was associated with higher levels of internalization of the thin ideal, body surveillance and dieting, and lower body esteem. This finding adds a new dimension to Pea et al.'s (2012) finding that communication via electronic media was related to more general negative social well-being in 8-12-year-old girls.

In the present sample, the relationships observed for Internet usage tended to be larger than those obtained for the traditional media. Unlike television and magazines, which are more unidirectional and passive, the Internet allows and encourages considerably greater participation by the user. Girls are able to find, engage with, and share the activity or information that they are interested in with their friends. Further, in contrast to magazines and television, the Internet presents a constantly changing medium that is not limited by cost or physical availability. Rather, girls are able to access the Internet in private and whenever they wish, with no set time limits (unless set by parents). It is this feature of continual accessibility that makes the Internet an increasingly pervasive component of contemporary life.

More generally, the study confirms a growing trend for young girls to be accessing media designed for older girls. Specifically, the preteenage girls in the present study, who were still in primary school, clearly accessed magazines, television, and Internet media targeted at teenage girls. Their favorite magazines were *Girlfriend* and *Dolly*, with a target readership of 14 to 17 years; a number watched television shows like *Gossip Girl* and *Heartbreak High*; and

nearly half had a Facebook profile (minimum age = 13 years). It is as if the girls are in a great hurry to grow up, consistent with popular accounts, the so-called Lolita Effect (Durham, 2008). In this, they are highly likely to be exposed to material that they neither fully understand nor evaluate sufficiently critically.

The present study offers a clear and unequivocal demonstration that exposure to the Internet, especially social networking sites like Facebook, is related to internalization of the thin ideal, body surveillance, body esteem, and dieting behaviors, in this sample of preteenage girls. However, like other studies examining the effects of naturally occurring media exposure (usually fashion magazines and television), it cannot identify the specific attributes of the Internet responsible for the relationships. Most likely, there are multiple appearance messages across a number of sites that reinforce each other and cumulate with increasing total Internet exposure. Social networking sites, in particular, are liable to arouse appearance concerns as users typically spend many hours creating and customizing their public or semipublic personal profile (Tiggemann & Miller, 2010). Many girls also spend considerable time viewing and making comments on others' profiles (Manago, Graham, Greenfield, & Salimkhan, 2008). It may be that social networking sites provide a pervasive and intense form of "appearance conversations" that have been shown to be associated with poorer body image (Clark & Tiggemann, 2006; Jones et al., 2004). In addition, the speed and ease with which girls can connect with their peers (here Facebook users had over 130 "friends" each on average) surely gives rise to ready and multiple social comparisons. As these comparisons are often made with at least somewhat idealized images (girls are likely to post only photographs showing themselves looking good or doing something "cool," and even these can be digitally altered), girls' own body image concerns are likely to be exacerbated.

The study has a number of practical implications. Media literacy programs, which have shown some success in combating negative body image (e.g., Levine & Murnen, 2009), need now to explicitly include the Internet in addition to print and televised media. The Internet should be acknowledged as a potent source of influence on girls' body image concerns across a wide age range, and hence incorporated into general intervention programs targeted at teenage and preteenage girls. In particular, girls need to become critically aware of the idealized images that are presented to them online, as well as of the potential appearance and other pressures involved in social networking sites. At a broader level, the present results support recommendations to limit screen time (including Internet time). In the present sample of preteenage girls, only 55% reported any parental rules governing their Internet use. Additional parental supervision or monitoring software might help limit girls' Internet viewing to age-appropriate material.

As in all studies, the above findings need to be considered in the context of a number of limitations. First, the present sample was recruited from

Catholic primary schools in metropolitan Adelaide. Although these covered a wide range of socioeconomic status, future research should investigate more diverse samples with respect to religion and ethnicity. Second, as with almost all studies of naturally occurring media exposure, measures of media usage were self-report. Third, it would have been useful to measure height and weight to obtain an objective measure of girls' BMI, so that this might be taken into account. Fourth, the present study was correlational in design and thus firm causal conclusions cannot be drawn. While it is possible that Internet exposure impacts body image concerns, the converse is equally plausible. That is, it may be those girls most invested in their appearance who seek out particular media, e.g., Facebook, perhaps for social comparison purposes. Other unmeasured variables, such as interest in popularity or social approval, may also be responsible for the observed relationships. Thus, future correlational studies might attempt to explicitly measure possible mechanisms, in particular social comparison. Experimental designs that manipulate exposure and prospective designs that track Internet exposure and body image over some time are also required for any more definitive answers.

In conclusion, the present study has made an important start on documenting the role of the Internet in the formation of preteenage girls' body image. It has clearly demonstrated a link between Internet use, especially social networking sites, and a number of indices of body image concern in this age group. As such, it has extended knowledge about the role of the media in contemporary 10-12-year-old girls' lives. Future research will be needed to address these questions in still younger samples.

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