Targets of comparison and body image in women's everyday lives: The role of perceived attainability

Jasmine Fardouly [a],[*], Rebecca T. Pinkus [b], Lenny R. Vartanian [c]

[a] Centre for Emotional Health, Department of Psychology, Macquarie University, Sydney, New South Wales, 2109, Australia
[b] School of Psychology, The University of Sydney, Sydney, New South Wales, 2006, Australia
[c] School of Psychology, UNSW Sydney, Sydney, New South Wales, 2052, Australia

ARTICLE INFO

ABSTRACT

Appearance comparisons can negatively influence women's body image, but little is known about the potential impact of comparison targets. We conducted an ecological momentary assessment study in which female undergraduate students (N = 146) completed a brief online survey at five random times every day for five days. In this survey, participants were asked if they had made an appearance comparison. If so, they were asked who they compared themselves to (i.e., close peer, acquaintance, stranger, celebrity/model), how they rated compared to that person (i.e., more attractive, just as attractive, less attractive), and how attainable that person's appearance is to them. All participants then completed state measures of mood, appearance satisfaction, and intention to diet and exercise. Upward comparisons (i.e., to more attractive others) to all targets were associated with less appearance satisfaction, lower positive mood, and more thoughts of dieting and exercising than when no comparisons were made. There were indirect relationships between comparisons to celebrities/models versus all other targets and appearance satisfaction via perceived attainability of the target's appearance. These findings suggest that celebrities may be particularly harmful appearance comparison targets in women's everyday lives because their attractive appearance is perceived to be less personally attainable than other targets.

© 2021 Elsevier Ltd. All rights reserved.

1. Introduction

Body image concerns are pervasive among young women in high-income nations (Swami et al., 2010). These concerns often impair women's quality of life (Nayir et al., 2016) and are associated with depression (Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006), unhealthy diet and exercise behaviours (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006), and eating disorders (Stice, 2002). Body image is influenced by a number of sociocultural factors (Keery, van den Berg, & Thompson, 2004; van den Berg, Thompson, Obremski-Brandon, & Coovert, 2002) but one factor that has been consistently linked with body image concerns are appearance-based social comparisons (Myers & Crowther, 2009). The present study examines the importance of the target of comparison (e.g., celebrities, peers, strangers) to this process.

1.1. Appearance comparisons

According to Festinger's (1954) social comparison theory, people have an innate desire to evaluate their progress and standing on different aspects of their lives and often compare themselves to others in order to make those evaluations when objective standards are unavailable. There are different directions of comparison: upward, lateral, and downward. Upward comparisons occur when people compare themselves to others who are *better off* than they are, lateral comparisons occur when people compare themselves to others who are *the same* as them, and downward comparisons occur when people compare themselves to others who are *worse off* than they are. In regards to appearance, making an upward comparison has been frequently associated with negative body image, while making a lateral or downward comparison has been associated with more positive body image (Fardouly, Pinkus, & Vartanian, 2017; Fuller-Tyszkiewicz et al., 2019; Leahey, Crowther, & Ciesla, 2011; Myers & Crowther, 2009).

The majority of research in the body image literature has focused on upward appearance-based comparisons (Myers & Crowther, 2009). The focus on upward comparisons may be due to: (1) the pervasive use of both traditional media (e.g., magazines, television)

and social media (e.g., Facebook, Instagram), which often portray idealized images of thin and toned women (Sypeck, Gray, & Ahrens, 2004; Tiggemann & Zaccardo, 2018), (2) women's tendency to make more upward appearance comparisons than lateral or downward appearance comparisons in their everyday lives (Fardouly et al., 2017; Leahey & Crowther, 2008; Leahey et al., 2011), and/or (3) the negative impact those comparisons can have on body image (Myers & Crowther, 2009). Although upward appearance comparisons typically have a negative impact on body image, there is some research to suggest that the extent of that impact may depend on who is the target of those comparisons (Leahey & Crowther, 2008; Martin & Gentry, 1997; Mills, Polivy, Herman, & Tiggemann, 2002). Determining when and why upward appearance comparisons are associated with more negative body image is vital if we are to reduce the impact of those comparisons on women's body image.

1.2. Targets of comparison

One of the central arguments in Festinger's (1954) social comparison theory is that, in order to obtain accurate self-evaluations, people need to compare themselves to similar others. Most research in the body image literature, however, has focused on upward appearance comparison to idealized media images containing models or celebrities (Myers & Crowther, 2009), who may be considered to be "dissimilar" comparison targets given the amount of resources that they have to improve their appearance. Relatively little research has been conducted on "similar" comparison targets, such as peers (Myers & Crowther, 2009). Examining a more diverse range of targets is important because there is some evidence to suggest that upward appearance comparisons to peers might have a different impact on women's body image than do upward appearance comparisons to models or celebrities. However, research in this area is mixed. Some studies suggest that upward comparisons to peers may be more strongly linked to body dissatisfaction than are upward comparisons to models/celebrities (Carey, Donaghue, & Broderick, 2014), and some suggest that upward comparisons to models/celebrities are a stronger predictor of body dissatisfaction than are upward comparisons to peers (Franzoi & Klaiber, 2007; Leahey & Crowther, 2008). Other studies, however, find no relative difference between upward comparisons to models/celebrities and peers (Brown & Tiggemann, 2016; Cohen & Blaszczynski, 2015; Fardouly & Vartanian, 2015; Jones, 2001; Ridolfi, Myers, Crowther, & Ciesla, 2011; Schutz, Paxton, & Wertheim, 2002).

The contrasting results found in the literature on upward comparisons to different targets may be due to the research methods used. Most of the existing research has been cross-sectional and correlational (e.g., Carey et al., 2014; Fardouly & Vartanian, 2015; Franzoi & Klaiber, 2007; Jones, 2001; Schutz et al., 2002), asking women to retrospectively recall their comparison tendencies in general or over long periods of time. Cross-sectional correlational studies provide valuable information about people's global perceptions of their appearance comparison tendency and about the relationship between those perceptions and body image concerns. However, given that people's memory of their experiences over long periods of time is generally based on heuristics that over-represent salient events or recent occurrences (Smyth & Stone, 2003), these measures cannot accurately capture the frequency and potential impact of appearance comparisons to different targets in people's lives. Some experimental studies ask participants to report on their appearance comparison frequency during exposure to images of unknown peers (i.e., strangers) or models/celebrities (e.g., Brown & Tiggemann, 2016; Cohen & Blaszczynski, 2015) and are thus not affected by retrospective recall bias. However, because these studies generally examine appearance comparisons to specific stimuli selected by the experimenter (e.g., thin ideal social

media images) in laboratory settings and because they do not capture comparisons to known targets (e.g., acquaintances, close peers), they lack ecological validity. Ecological momentary assessment (EMA) is a method that allows for the examination of people's experiences in their everyday lives, and thus overcomes some of the limitations of cross-sectional correlational and experimental research noted above. In EMA studies, participants are asked to complete questionnaires multiple times per day regarding the experiences they have as those experiences occur in their daily lives. Because questionnaires are completed in response to events that occur in people's natural environment, these data are highly generalizable to real life and this methodology thus has good ecological validity.

1.3. Appearance comparisons in women's everyday lives

A few EMA studies have examined the frequency with which women compare their appearance to different target groups in their everyday lives (for a review, see Fuller-Tyszkiewicz, 2019), and those studies have found mixed results. For example, consistent with Festinger's (1954) theory, Leahey and Crowther (2008) found that the vast majority of appearance comparisons in women's everyday lives were made to "similar" targets (which could include a friend, sister, roommate, or acquaintance) rather than to "dissimilar" targets (which were primarily media images of models or celebrities). In contrast, Ridolfi et al. (2011) found that women compared their appearance to media images and peers to a similar extent, and McKee et al. (2013) and Fitzsimmons-Craft (2017) actually found that appearance comparisons to strangers were the most common among young women. The discrepancies in the frequency with which women made appearance comparisons to different targets may at least in part be a result of the studies categorising targets in different ways. For example, any targets other than celebrities and models were categorised as "similar" in Leahey and Crowther's (2008) study, only peers and models/celebrities were examined in Ridolfi et al.'s (2011) study, and only peers were examined in the studies by McKee et al. (2013) and Fitzsimmons-Craft (2017). Research investigating a wider range of targets, beyond just peers and models, is needed to more accurately capture the frequency and potential impact of comparisons made to different targets in women's lives.

To our knowledge, only one EMA study has examined the association between comparisons made to different targets and women's body image (Leahey & Crowther, 2008). In that study, upward appearance comparisons to similar targets (e.g., family, peers, acquaintances) were associated with more appearance esteem than were upward comparisons to dissimilar targets (e.g., models and celebrities), whereas downward appearance comparisons to similar targets were associated with less appearance esteem than were downward comparisons to dissimilar targets (Leahey & Crowther, 2008). The authors of that EMA study suggested that their findings may be due to the appearance of peers being perceived to be more attainable than the appearance of women in the media. If women perceive themselves to be similar to their peers, then they may feel more capable of attaining their peer's appearance, and thus women may be more inspired after exposure to a thin peer rather than to a thin media image. Similarly, downward comparisons with peers may lead to more negative consequences than downward comparisons to media images because peers may be seen as more similar targets; in turn, women may see themselves as more vulnerable to looking like their less attractive peer (cf. Lockwood, 2002). Note, however, that the authors did not specifically test this hypothesised mechanism. Perceived attainability of the target's appearance has been used to describe differences found between comparisons to peers and models in previous research (Knobloch-Westerwick & Romero, 2011; Leahey & Crowther, 2008). However, researchers

have yet to *measure* the perceived attainability of the appearance of different targets or test the mediating role of attainability in the relationship between appearance comparisons to different targets (e.g., peers or models) and young women's body image. Thus, the mechanism explaining any differences in the potential impact of comparison to different targets is yet to be explored.

Previous EMA research has also not examined the medium through which comparisons to different targets occur. Comparisons to celebrities and models are likely to occur through traditional media (e.g., magazines, television) and via social media platforms. However, comparisons to known others, such as close peers and acquaintances, are likely to be made in person or through social media. Comparisons to strangers may also be most common in person or via social media. Images in traditional media and on social media are often edited and enhanced (Manago, Graham, Greenfield, & Salimkhan, 2008; Reaves, Bush Hitchon, Park, & Woong Yun, 2004; Zhao, Grasmuck, & Martin, 2008), and thus may not reflect a person's actual appearance. Although people can enhance their appearance in person using makeup and styling, a person's appearance may be more difficult to manipulate in person and thus may be more reflective of reality. Therefore, it is important to consider the medium through which comparisons occur when investigating the relationships between comparisons to different targets and young women's body image.

1.4. The present study

The present study aimed to: (1) examine the frequency, direction, and medium of comparisons to different targets in young women's everyday lives; (2) examine the relationship between appearance comparisons to different targets within each comparison direction and women's appearance satisfaction, mood, and thoughts of dieting and exercising; and (3) investigate the potential mediating role of perceived attainability of the target's appearance on those relationships. Unlike previous EMA research (Fitzsimmons-Craft, 2017; Leahey & Crowther, 2008; McKee et al., 2013; Ridolfi et al., 2011), appearance comparisons to a diverse range of different targets (close peers, acquaintances, strangers, models/celebrities) were examined separately in the present study. Given the mixed findings from previous EMA studies, no specific predictions were made for the overall frequency of comparisons made to different targets.

Upward comparisons to all targets were predicted to be more common than lateral and downward comparisons (Leahey & Crowther, 2008; Leahey et al., 2011), especially to models and celebrities. Comparisons to models and celebrities were predicted to be primarily made via traditional forms of media, whereas comparisons to the other targets were predicted to be primarily made in person. Unlike Leahey and Crowther (2008), in the present study we also examined the relative differences in women's body image between when they made comparisons to different targets within each comparison direction and when they made no appearance comparisons. Based on EMA research in other domains (e.g., Fardouly et al., 2017), upward comparisons to all targets were predicted to be associated with less appearance satisfaction, less positive mood, and more thoughts of dieting and exercising than when no comparisons were made. Based on the conclusions of Leahey and Crowther (2008), upward comparisons to celebrities/models were hypothesised to be associated with less appearance satisfaction, lower positive mood, and more thoughts of dieting and exercising than the other targets, and this relationship was predicted to be mediated by lower perceived attainability of the celebrity/models' appearance.

Lateral and downward comparisons to all targets were predicted to be associated with higher appearance satisfaction, a more positive mood, and less thoughts of dieting and exercising than when no comparisons were made. Downward comparisons to close peers were predicted to be linked to less appearance satisfaction, less positive mood, and more thoughts of dieting and exercising than downward comparisons to celebrities and models (Leahey & Crowther, 2008), and this relationship was expected to be mediated by higher perceived attainability of the appearance of close peers. Given that previous EMA research has not examined the relationship between lateral comparisons to different targets and body image concerns, no specific predictions were made for this direction. The relationships between comparisons to strangers and acquaintances versus the other target groups and the body image-related measures were also examined in an exploratory manner given the lack of previous EMA research for these target groups.

2. Method

2.1. Participants

Female first-year psychology students (N = 160) at a large public university in Australia participated in this study. Participants needed to complete at least 80 % of the online EMA questionnaires sent to them over the five-day period in order to meet the requirements of the study and be fully reimbursed for their participation. Of the full sample, 14 participants were excluded from the analyses due to poor compliance. The final sample consisted of 146 participants who met the 80 % completion rate requirement (M = 23.26/25 surveys complete; SD = 1.44). Their mean age was 19.24 years (SD = 2.24), and their mean Body Mass Index (BMI: kg/m^2) was 21.74 (SD = 3.71). The majority of participants identified as either Asian (n = 64; 44.4 %) or White (n = 57; 39.6 %). There were no significant differences between those who were excluded from the study (n = 14) and those in the final sample in relation to age, $t(158)$ = −0.75, p = .45, BMI, $t(156)$ = 1.37, p = .17, or ethnicity, $\chi(3)$ = 2.18, p = .54. Participants were given course credit (n = 135) or were paid $30 AUD ($n$ = 25) for their participation.

2.2. Procedure

These data were part of a larger EMA study described to participants as examining women's daily experiences (see Fardouly et al., 2017 for a detailed study procedure). Data were collected between 2012 and 2014. First, participants came to the laboratory to provide informed consent, complete a demographics questionnaire (e.g., age, ethnicity, height and weight [to calculate BMI]), and receive further study information. Participants were then sent a brief (approximately four minute) online survey (i.e., EMA survey) via text messages to their personal mobile phones five times each day for the next five days (which included at least one day of a weekend). The survey assessed the frequency, nature, and impact of appearance comparisons in their lives. Text messages were sent between 9am and 11 pm using a stratified random sampling schedule. All participants completed a post-study reactivity measure (i.e., the extent to which recording appearance comparisons made them more aware of how much they engaged in such comparisons; 1 = *very little*, 7 = *very much*) and were debriefed on completion of the five-day period. The university's ethics committee approved this study.

2.3. Measures

2.3.1. Appearance comparisons
The appearance comparison questions were modelled on those created by Leahey and Crowther (2008). Participants were asked whether they had compared their appearance to another person since completing the previous EMA questionnaire (*yes/no*). If they had *not* made an appearance comparison, then they were

immediately directed to the outcome measures. If they had made an appearance comparison, participants were asked to think about the most recent comparison they had made and specify: (1) who they compared themselves to (*sister/cousin/close friend* [i.e., close peer], *acquaintance/distant friend/colleague* [i.e., acquaintance], *stranger, fashion model/celebrity*, "*other*" option); (2) how attainable/achievable they thought that person's appearance was for them (4-point scale from 1 = *not at all* to 4 = *very much*); (3) what medium it was through (*social media, Internet, magazine/television/billboard* [i.e., traditional media], *in person,* "*other*" option); and (4) how they thought they looked compared to the other person (*much worse, worse, the same, better,* or *much better*; direction-of-comparison measure). For the direction-of-comparison measure, responses of *worse* and *much worse* were coded as *upward comparisons*, responses of *the same* were coded as *lateral comparisons*, and responses of *better* and *much better* were coded as *downward comparisons*.

2.3.2. Outcome measures

For each of the outcome measures (described below), participants were asked to keep in mind their feelings immediately following the most recent occasion in which they compared their appearance to another person (if participants indicated that they *had* made a comparison), or to keep in mind their feelings since they last completed the questionnaire (if participants indicated that they *had not* made a comparison).

2.3.2.1. Appearance satisfaction

Participants were asked to indicate on a 5-point scale (1 = *not at all*, 5 = *extremely*) how they felt in regard to six statements related to appearance satisfaction. Five items were taken from the Appearance subscale of the State Self-Esteem Scale (SSES; Heatherton & Polivy, 1991; e.g., "I am pleased with my appearance right now"). The sixth statement was modified from the original scale and was included to assess face-related appearance ("I feel satisfied with the way my face looks right now"). Scores were summed with higher scores indicating higher appearance satisfaction. Internal reliability for this measure in the present study was good (Cronbach's α = .87).

2.3.2.2. Mood

Similar to Vartanian, Pinkus, and Smyth (2014), we created a mood measure that was modelled on the Positive and Negative Affect Schedule – Short Form (PANAS-SF; Watson, Clark, & Tellegen, 1988). Participants reported on a 5-point scale (1 = *not at all*, 5 = *extremely*) how they felt in regard to five words related to a positive mood (*happy, inspired, proud, satisfied, enthusiastic*) and five words related to a negative mood (*upset, distressed, guilty, ashamed, discouraged*). Some words from the PANAS-SF were judged to be inappropriate following appearance comparisons (e.g., *scared, hostile*). Therefore, we selected a subset of words from the PANAS-SF and added the words *happy, satisfied,* and *discouraged*. Total scores represent a sum of the positive mood items minus the sum of the negative mood items, with higher scores indicating a more positive mood. Internal reliability was adequate for the overall mood measure (Cronbach's α = .73).

2.3.2.3. Thoughts of dieting and exercising

Similar to previous EMA research (Leahey & Crowther, 2008), two questions were adapted from the Eating Disorders Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994) to measure participants' thoughts of dieting and exercising. Those items were "To what extent have you thought about trying to restrict the amount of food you eat in order to influence your shape or weight?" and "To what extent have you thought about exercising as a means of controlling your weight, altering your shape or amount of fat, or

burning off calories?" Responses to these questions (1 = *not at all*, 4 = *very much*) were averaged to form an overall measure of thoughts of dieting and exercising to lose weight. Internal reliability was adequate for the combined measure (Cronbach's α = .78).

2.4. Data analysis

Although participants' mean rating on the reactivity measure (*M* = 5.07, *SD* = 1.55) suggested that participants thought that recording appearance comparisons made them more aware of making such comparisons, there was no difference in the number of appearance comparisons reported on any day (i.e., Day 1 to Day 5) throughout the study, $F(1,37) = 3.66$, $p = .06$. Therefore, although there does seem to be some increased awareness of making appearance comparisons due to participation in the study, there was no indication that this awareness resulted in an increase in the frequency of making appearance comparisons over the five-day testing period. Further, controlling for the reactivity measure in the main study analyses did not change the pattern or significance of results. For simplicity, reactivity scores were not included in the final models reported below.

Analyses were conducted to (a) examine the frequency, direction, and medium of comparisons to each target, (b) investigate the relationship between comparisons to different targets within each direction and appearance satisfaction, mood, and thoughts of dieting and exercising, and (c) test the potential mediating role of perceived attainability. The frequency, direction, and medium of comparisons to each target are presented using descriptive statistics and parameter estimates from Multinomial Regression Analyses in SPSS. Because the data had a nested structure (i.e., multiple observations [Level-1 comparisons] were nested within participants [Level-2 individuals]), multilevel modelling with MPlus version 8.2 (Muthén & Muthén, 1998-2017Muthén & Muthén, 1998-2017) was used in order to control for the non-independence in these data. Dummy coded variables were created for each target. Fixed effects were specified at Level 1 (i.e., within-person level), and the variables in this level were group mean centred. MPlus allows for missing data within the Level-1 dataset, thus missing data were specified and handled with pairwise deletion. As suggested by Hofmann and Gavin (1998), aggregated variables for each of the predictors per participant were created and added at Level 2 (i.e., between-person level) to control for individual variance of the predictors. To ease interpretation of the results relevant to the study aims, the aggregated variables were not included in the results tables reported in this manuscript. Separate models were conducted with each target as the reference category. Following Liu et al. (2015), mediation hypotheses were tested via Monte Carlo simulation procedures with 20,000 replications using open-source software R (Selig & Preacher, 2008). Indirect (i.e., mediation) effects are significant if the 95 % confidence intervals do not contain zero. Given the large number of analyses in the current paper, significance levels were adjusted paper-wide to account for a 5% false discovery rate using the Benjamini–Hochberg procedure (Benjamini & Hochberg, 1995). The resulting adjusted *p*-value was .021. Because the mediation analyses only produced confidence intervals, those results were not included in the false discovery rate.

3. Results

3.1. Frequency and direction of comparisons to targets

Across participants, 3,396 EMA surveys were recorded. Participants reported making at least one appearance comparison in 920 (27.09 %) surveys and reported not making any appearance

Table 1
Number (Percentage) of Upward, Lateral, and Downward Appearance Comparisons made to each Target Group.

	Upward	Lateral	Downward	Target Total
Close Peer	68 (R: 43.0%[a], C: 14.2%[a])	51 (R: 32.3%[a,b], C: 28.2%[a])	39 (R: 24.7%[b], C: 17.3%[a])	158 (17.9%[c])
Acquaintance	130 (R: 50.8%[a], C: 27.1%[b])	56 (R: 21.8%[b], C: 30.9%[a])	70 (R: 27.3%[b], C: 31.1%[b])	256 (28.9%[b])
Stranger	151 (R: 40.6%[a], C: 31.5%[b])	67 (R: 20.7%[b], C: 37.0%[a])	106 (R: 32.7%[c], C: 47.1%[c])	324 (36.6%[a])
Celebrity/Model	130 (R: 88.4%[a], C: 27.1%[b])	7 (R: 4.8%[b], C: 3.9%[b])	10 (R: 6.8%[b], C: 4.4%[d])	147 (16.6%[c])
Direction Total	479 (54.1%[a])	181 (20.5%[b])	225 (25.4%[b])	885

Note. R indicates the percentage across each row (i.e., percentage of comparisons within a specific target for each direction) and C indicates the percentage down each column (i.e., percentage of comparisons within a specific direction to each target). Different superscript letters represent significant differences ($p < .021$) between the relevant percentages. The total number of comparisons reported in Table 1 differs from the total number reported in the text because there was missing data for the target-of-comparison and direction-of-comparison measures.

Table 2
Number of Upward, Lateral, and Downward Appearance Comparisons made to each Target Group within each Medium.

Target	Medium															
	Social Media				Internet				Traditional Media				In Person			
	Up	Lat	Down	Total	Up	Lat	Down	Total	Up	Lat	Down	Total	Up	Lat	Down	Total
Close Peer	7	4	1	12[a]	0	1	1	2[b]	0	0	0	0	61	43	36	140[c]
Acquaintance	29	10	8	47[a]	2	1	4	7[b]	2	0	3	5[b]	95	45	55	195[c]
Stranger	9	5	3	17[a]	9	2	1	12[a]	6	1	0	7[a]	126	58	102	286[b]
Celebrity	25	2	1	28[a]	42	1	0	43[a]	63	4	8	75[b]	0	0	0	0
Total	70	21	13	104	53	5	6	64	71	5	11	87	282	146	193	621

Note. Up = Upward Comparisons, Lat = Lateral Comparisons, Down = Downward Comparisons. Different superscript letters within a row represent significant differences ($p < .021$) in the total frequency of comparison via each medium within each target group. The total number of comparisons reported to each target differ between Tables 1 and 2 because there was missing data for the medium-of-comparison measure.

comparisons in 2,476 (72.91 %) surveys. As seen in Table 1, of the most recent appearance comparisons that participants reported at each survey, the most frequent comparison targets were strangers then acquaintances, then close peers and celebrities/models.[1] Further, collapsing across targets, upward comparisons were the most common, followed by downward and lateral comparisons. As seen in Table 1, the vast majority of comparisons to celebrities/models were upward, with few lateral and downward comparisons reported. Although upward comparisons were also the most common for the other targets, responses were more evenly spread between lateral and downward comparisons than they were for celebrities/models. Participants made significantly more upward comparisons than lateral and downward comparisons to all targets except close peers for which there was no significant difference in the frequency of upward and lateral comparisons. Downward comparisons were significantly more frequent than lateral comparisons to strangers but there were no differences in the frequencies of lateral and downward comparisons for the other targets. Given the small number of lateral and downward comparisons made to celebrities/models (7–10 comparisons), this target group was removed from any analyses examining comparisons in those directions.

3.2. Medium of comparison to different targets

The frequency of upward, lateral, and downward comparisons made to different targets within each medium are presented in Table 2.[2] Most comparisons to close peers, acquaintances, and strangers were made in person. Comparisons to celebrities were primarily through traditional media (e.g., magazines, television) but were also common through social media and the Internet. There were not enough comparisons made to different targets within each medium to meaningfully examine any medium by target interactions. Thus, comparison medium was not included in any further analyses.

3.3. Upward comparisons to different targets

3.3.1. Appearance satisfaction
Results of the multilevel models for upward comparisons are reported in Table 3. Upward comparisons to all targets were associated with less appearance satisfaction than when no comparisons were made (Model 1). There was no difference in appearance satisfaction following upward comparisons among any of the target combinations. Monte Carlo simulations yielded significant indirect effects via attainability for comparisons to celebrities versus close peers (95 % confidence interval [CI] = [.030, .134]), celebrities versus acquaintances (95 % CI = [.022, .095]), and celebrities versus strangers (95 % CI = [.016, .083]). When making an upward comparison, participants rated the appearance of celebrities/models as less attainable than the appearance of close peers (estimate = −0.477, standard error [SE] = 0.176, $p = .007$), acquaintances (estimate = −0.349, SE = 0.100, $p < .001$), or strangers (estimate = −0.282, SE = 0.106, $p = .007$), which was in turn associated with less appearance satisfaction (estimate = −0.170, SE = 0.058, $p = .003$). There was no indirect effect of attainability for the relationships between upward comparisons and appearance satisfaction in any of the other combination of targets.

3.3.2. Mood
As seen in Table 3, upward comparisons to all targets were associated with a less positive mood than when no comparisons were made (Model 1). Upward comparisons to close peers were associated with a more positive mood than upward comparisons to strangers (Model 3). No differences were found between upward comparisons among any of the other target combinations. There was no indirect effect of attainability for any relationships between the upward comparison targets and mood.

---

[1] A small number ($n = 9$) of appearance comparisons were also made to older female relatives (e.g., mothers, aunts) but they were too infrequent to include in the analyses. There were 22 comparisons originally assigned to the "other" target category, but those comparisons were recategorized by the first author into the existing target groups based on text responses from participants.

[2] There were six responses originally assigned to the "other" medium category. Of those comparisons, four were recategorized by the first author into existing mediums and two were unable to be recategorized (i.e., "mentally", "photos") and thus became missing data for the medium-of-comparison variable.

Table 3
Unstandardized Coefficients of the Multilevel Models for Upward Comparisons.

Variable	Appearance Satisfaction		Mood		Thoughts of Dieting and Exercising	
	Estimate	SE	Estimate	SE	Estimate	SE
Model 1						
Intercept	3.133***	0.114	0.985***	0.163	1.466***	0.066
No vs. close peer	−0.223*	0.088	−0.329*	0.128	0.396***	0.092
No vs. acquaintance	−0.250***	0.066	−0.507***	0.120	0.239**	0.075
No vs. stranger	−0.309***	0.068	−0.735***	0.131	0.293***	0.063
No vs. celebrity	−0.321***	0.051	−0.498***	0.125	0.378***	0.067
Model 2						
Intercept	1.259	0.985	0.179	1.306	2.925**	0.909
Celebrity vs. close peer	0.098	0.100	0.169	0.172	0.017	0.105
Celebrity vs. acquaintance	0.070	0.067	−0.009	0.138	−0.139	0.092
Celebrity vs. stranger	0.011	0.074	−0.237	0.144	−0.086	0.088
Model 3						
Intercept	2.738***	0.750	0.080	1.053	3.164***	0.641
Close peer vs. acquaintance	−0.028	0.108	−0.178	0.165	−0.156	0.108
Close peer vs. stranger	−0.087	0.102	−0.405*	0.162	−0.103	0.114
Model 4						
Intercept	2.743***	0.686	0.084	0.959	2.007**	0.619
Acquaintance vs. stranger	−0.059	0.083	−0.227	0.148	0.053	0.088

Note. Separate models were created with appearance satisfaction, mood, and thoughts of dieting and exercising as the outcome variables. The target reported first was the reference category in each model. All relevant target combinations were entered into each model but only the novel coefficients are reported in the table in each sequential model to avoid repetition.
* $p < .021$.
** $p < .01$.
*** $p < .001$.

3.3.3. Thoughts of dieting and exercising

Upward comparisons to all targets were associated with more thoughts of dieting and exercising to lose weight than when no comparisons were made (see Table 3, Model 1). No differences were found between upward comparisons to any of the target combinations and thoughts of dieting and exercising. There was no indirect effect of attainability for any relationships between the upward comparison targets and thoughts of dieting and exercising.

3.4. Lateral comparisons to different targets

3.4.1. Appearance satisfaction

Results of the multilevel models for lateral comparisons are reported in Table 4. Lateral comparisons to close peers were associated with more appearance satisfaction than when no comparisons were made (Model 1). Lateral comparisons to acquaintances and strangers were not associated with any more or less appearance satisfaction than when participants made no comparisons. There were also no relative differences in levels of appearance satisfaction when lateral comparisons were made to each of the target combinations. There was no indirect effect of attainability for any relationships between the lateral comparison targets and appearance satisfaction.

3.4.2. Mood

As seen in Table 4, there were no differences in mood for lateral comparisons made to close peers, acquaintances, or strangers relative to no comparisons or between lateral comparisons made among any combination of the targets. There was no indirect effect of attainability for any relationships between the lateral comparison targets and mood.

3.4.3. Thoughts of dieting and exercising

Participants' thoughts of dieting and exercising did not differ when lateral comparisons were made to any target (i.e., close peers, acquaintances, or strangers) nor were there differences in these thoughts relative to when no comparisons were made (see Table 4).

There was no indirect effect of attainability for any relationships between the lateral comparison targets and thoughts of dieting and exercising.

3.5. Downward comparisons to different targets

3.5.1. Appearance satisfaction

Results of the multilevel models for downward comparisons are reported in Table 5. Downward comparisons to strangers were associated with more appearance satisfaction than when no comparisons were made (Model 1). There were no differences in appearance satisfaction between downward comparisons to close peers or acquaintances relative to no comparisons, or among downward comparisons for any of the combinations of targets. There was no indirect effect of attainability for any relationships between the downward comparison targets and appearance satisfaction.

3.5.2. Mood

Downward comparisons to close peers, acquaintances, or strangers did not differ on mood relative to when no comparisons were made. Mood ratings did not differ for downward comparisons made to any of the target combinations. There was no indirect effect of attainability for any relationships between the downward comparison targets and mood.

3.5.3. Thoughts of dieting and exercising

As seen in Table 5, participants' thoughts of dieting and exercising did not differ relative to when no comparisons were made or when downward comparisons were made across any target combinations. There was no indirect effect of attainability for any relationships between the downward comparison targets and thoughts of dieting and exercising.

4. Discussion

This study examined (1) the frequency, direction, and medium of appearance comparisons to different targets in women's every-

Table 4
Unstandardized Coefficients of the Multilevel Models for Lateral Comparisons.

Variable	Appearance Satisfaction		Mood		Thoughts of Dieting and Exercising	
	Estimate	SE	Estimate	SE	Estimate	SE
Model 1						
Intercept	3.100***	0.114	0.946***	0.165	1.483***	0.066
No vs. close peer	0.246**	0.079	0.249	0.123	0.222	0.107
No vs. acquaintance	0.061	0.065	−0.050	0.123	0.083	0.070
No vs. stranger	0.097	0.065	0.073	0.102	0.054	0.073
Model 2						
Intercept	2.307***	0.556	0.360	0.886	2.850***	0.371
Close peer vs. acquaintance	−0.184	0.097	−0.299	0.153	−0.139	0.124
Close peer vs. stranger	−0.148	0.096	−0.176	0.142	−0.168	0.128
Model 3						
Intercept	2.555***	0.660	0.503	0.931	2.166***	0.568
Acquaintance vs. stranger	0.036	0.089	0.123	0.138	−0.029	0.098

Note. Separate models were created with appearance satisfaction, mood, and thoughts of dieting and exercising as the outcome variables. The target reported first was the reference category in each model. All relevant target combinations were entered into each model but only the novel coefficients are reported in the table in each sequential model to avoid repetition.
**$p < .01$.
***$p < .001$.

Table 5
Unstandardized Coefficients of the Multilevel Models for Downward Comparisons.

Variable	Appearance Satisfaction		Mood		Thoughts of Dieting and Exercising	
	Estimate	SE	Estimate	SE	Estimate	SE
Model 1						
Intercept	3.076***	0.112	0.944***	0.160	1.493***	0.066
No vs. close peer	0.132	0.082	0.318	0.154	0.067	0.089
No vs. acquaintance	0.108	0.062	−0.064	0.139	0.104	0.078
No vs. stranger	0.217***	0.062	0.111	0.108	0.090	0.085
Model 2						
Intercept	2.291***	0.532	0.358	0.781	2.727***	0.379
Close peer vs. acquaintance	0.060	0.087	−0.288	0.171	−0.001	0.095
Close peer vs. stranger	0.170	0.085	−0.112	0.120	−0.014	0.106
Model 3						
Intercept	2.605***	0.662	0.278	0.876	2.156***	0.551
Acquaintance vs. stranger	0.162	0.078	0.186	0.155	−0.033	0.106

Note. Separate models were created with appearance satisfaction, mood, and thoughts of dieting and exercising as the outcome variables. The target reported first was the reference category in each model. All relevant target combinations were entered into each model but only the novel coefficients are reported in the table in each sequential model to avoid repetition.
***$p < .001$.

day lives; (2) the relationship between comparisons to those targets within each direction and women's appearance satisfaction, mood, and thoughts of dieting and exercising; and (3) the mediating role of perceived attainability of the target's appearance on those relationships. This study extended previous EMA research by: (1) examining a variety of different comparison targets beyond just peers and models/celebrities; (2) testing the relative differences in women's body image-related variables between when they made a comparison to different targets and when they made no appearance comparisons; (3) exploring the relationships between lateral comparisons to different targets and body image-related variables; and (4) investigating the role of perceived attainability of the target's appearance.

4.1. The frequency, direction, and medium of comparisons to targets

In the present study, appearance comparisons to strangers were the most common in women's everyday lives, followed by comparisons to acquaintances, and then close peers and celebrities/models. Although previous EMA research has categorised comparison targets in different ways, the results of the present study are consistent with other EMA research, which found that the most frequent targets of comparison were groups that included acquaintances or strangers (Fitzsimmons-Craft, 2017; Leahey & Crowther, 2008; McKee et al., 2013). Scholars argue that appearance comparisons may be automatic (Bocage-Barthélémy et al., 2018; Want, 2009) and thus the frequency of comparisons to different targets found in the present study may reflect the frequency with which women are exposed to those targets in their everyday lives. Most comparisons to acquaintances and strangers were made in person and young women are likely to be exposed to a large number of strangers and acquaintances when at university or work and when engaging in other offline activities (e.g., traveling, playing sports, at the gym, shopping). Research suggests that, on average, people have four very close peers and 11 close peers (Mac Carron, Kaski, & Dunbar, 2016). Thus, although comparisons to close peers were also more likely to occur in person, young women are likely to be exposed to far fewer close peers in their daily lives than acquaintances and strangers. Comparisons to celebrities and models were primarily made through traditional forms of media (e.g., magazines, television). Young women in Australia report engaging with traditional forms of media for around three hours per day (Kemp, 2021; Statistica, 2013). Although media use is frequent among this demo-

graphic, it is likely to be less frequent than in-person activities (e.g., university classes or work), which may result in fewer comparisons to celebrities and models than strangers and acquaintances in women's daily lives.

Comparisons to all target groups also occurred via social media but these comparisons were less common than those made in person or via traditional media. The most frequent targets of comparison on social media were acquaintances, then celebrities/models, strangers, and close peers. Young women use social media for around two hours per day (Fardouly & Vartanian, 2015; Kemp, 2021) and in the present study they were only asked to report on their most recent appearance comparison at each survey. Thus, the lower frequency of social media comparisons relative to other mediums may be due to women spending less time on social media than on traditional media or offline activities. When using social media, women are exposed to a variety of different target groups (Fardouly & Vartanian, 2015; Fardouly et al., 2017), which would have limited the comparisons reported to any specific group. Comparisons made via the Internet were also less frequent than traditional media and in-person comparisons, and Internet comparisons were primarily made to celebrities and models. Thus, when on the Internet (not including social media), young women may be viewing fashion websites and blogs containing videos or images of this target group. Further EMA research is needed that allows for all appearance comparisons to be reported, rather than just the most recent comparison at each survey, to gain a better understanding of the frequency of appearance comparisons to different targets and via different mediums in women's lives.

It is also worth considering that the relative frequency of comparisons to different targets via different mediums may change over time. Our data were collected between 2012–2014. Although social media use in Australia has remained relatively stable since 2012, the platforms used by young people have changed, with Instagram and other image-based platforms increasing in popularity (GlobalWebIndex, 2020; Kemp, 2021). Comparisons to celebrities and influencers via social media may be more common in the present day due to the rise in Instagram use. Further, we did not have an "influencer" target group in the present study. Although participants were instructed to write the target in the "other" category if the person they had made a comparison to did not fit into the existing groups, only one response in the "other" category related to influencers (i.e., "fashion blogger"), and participants could have placed influencers in either the celebrity or stranger categories. Future EMA research should include an influencer response option for questions about comparison targets, especially given the increased use of Instagram in recent years.

Consistent with social comparison theory (Festinger, 1954) and previous research (Leahey & Crowther, 2008; Leahey et al., 2011), upward appearance comparisons were the most common direction of comparison in the present study. The frequency of upward comparisons, however, did vary by comparison target. The vast majority of comparisons to celebrities and models were upward in direction. While upward comparisons were the most common direction of comparisons to close peers, acquaintances and strangers, women also made frequent lateral and downward comparisons to those targets, with no significant difference between the frequency of upward and lateral comparisons to close peers. These results may also reflect the medium through which those comparisons occur. Comparisons to celebrities and models were primarily made via traditional media, which often portrays edited and enhanced versions of a celebrity or model's appearance to closely match societal beauty ideals (Reaves et al., 2004). As a result, comparisons made to celebrities and models through traditional media are generally in the upward direction (Myers & Crowther, 2009). In contrast, comparisons to the other target groups were primarily made in person. Methods for enhancing a person's appearance in person are mainly

limited to makeup and styling, which is likely to be more reflective of reality than enhancements made by computer programs (e.g., Photoshop) in traditional media.

It is also possible that the relative difference in comparison direction to models and celebrities versus the other target groups is due to the actual appearance of models and celebrities being more closely aligned to the societal appearance ideals than close peers, acquaintances, or strangers. Models are specifically chosen for their profession because they match cultural appearance ideals and popular celebrities also often match those ideals, whereas women's close peers, acquaintances, and strangers are likely to vary in appearance and attractiveness. Thus, it is perhaps not surprising that a higher proportion of upward comparisons were made to celebrities and models versus the other target groups.

4.2. Upward comparisons to targets and body image

As predicted, upward comparisons to all targets were associated with less appearance satisfaction, lower positive mood, and more thoughts of dieting and exercising than when no comparisons were made. This suggests that upward appearance comparisons to all target groups may elicit negative consequences for body image. However, given the data are correlational, it is also possible that the temporal order is reversed: When young women experience poor body image and mood, they may be more likely to seek out upward appearance comparisons. Although there were no relative differences in the associations between comparisons to different target groups and appearance satisfaction, there were indirect relationships (i.e., mediation) between comparisons to celebrities/models versus all other target groups and appearance satisfaction via perceived attainability of the target's appearance. Participants perceived the attractive appearance of celebrities and models to be less attainable than that of close peers, acquaintances, or strangers, which in turn was linked to less appearance satisfaction.

These results provide support for previous suggestions that the appearance of models and celebrities is perceived to be less personally attainable than the appearance of peers (e.g., Carey et al., 2014; Fardouly & Vartanian, 2015; Leahey & Crowther, 2008). Young women may perceive the appearance of celebrities and models to be less attainable because those targets may more closely match the appearance ideals than close peers, acquaintances, or strangers, and thus the discrepancy in perceived attractiveness between the celebrity/model and themselves may be larger than the discrepancy between the other targets and themselves. Alternatively, the appearance of celebrities and models may be perceived to be less personally attainable because of the resources (e.g., personal trainers, dieticians, stylists, makeup artists) that celebrities and models may have to enhance their appearance or because young women may be aware of the edited nature of traditional media imagery (McLean, Paxton, & Wertheim, 2016). Further research is needed to determine whether the attractive appearance of celebrities and models is perceived to be less personally attainable than the appearance of other target groups because celebrities and models more closely match the appearance ideals or because they are perceived to have more resources to enhance their appearance.

There was no difference in the perceived attainability of upward comparisons to close peers versus acquaintances or strangers. This may be due to close peers being perceived to have similar resources to improve one's appearance as acquaintances and strangers, or because close peers may be perceived to have similar levels of attractiveness to acquaintances or strangers when seen in person. However, due to the lower frequency of upward comparisons made to close peers than the other targets, it is also possible that the study did not have enough power to detect any differences in attainability between comparisons made to close peers versus acquaintances or

strangers. Further research is needed to investigate the relative differences in perceived attainability of upward comparisons across these target groups.

Perceiving a person's attractive appearance to be unattainable has been argued in the literature to be both better and worse for body image (e.g., Fardouly & Vartanian, 2015; Leahey & Crowther, 2008). The results of the present study provide preliminary evidence that perceiving a person's attractive appearance as being less personally attainable is linked to less appearance satisfaction. Narrow beauty ideals are promoted through all levels of society and many young women internalise these ideals (Brown & Slaughter, 2011) and strive to meet them. Models and celebrities are often used to promote these ideals in advertisements, and if women perceive the model or celebrity's appearance to be less personally attainable, it may cause poorer body image because the societal ideal feels forever out of reach. Because the current data are correlational in nature, the direction of this relationship cannot be determined. Further experimental and longitudinal research is needed to investigate whether lower perceived attainability of a target's attractive appearance causes decreased appearance satisfaction and/or whether lower appearance satisfaction leads to less perceived attainability of a target's attractive appearance. The findings of the present study also highlight the role of perceived attainability as a potential mechanism explaining the differences in upward comparisons to different targets and appearance satisfaction among young women. This study represents a first step at examining perceived attainability in the context of appearance comparisons and body image. The factors influencing judgements of attainability remain unknown and the relationship between attainability and body image may depend on the aspect of the body being examined (e.g., face, body shape, weight). More nuanced research is needed to better understand the relationship between perceived attainability of a target's appearance and body image.

Engaging in upward appearance comparisons to all target groups was associated with a less positive mood and more thoughts of dieting and exercising to lose weight than when no comparisons were made. There were, however, no relative differences between upward comparisons made to the target groups and thoughts of dieting and exercising, and only one difference emerged between the target groups for mood. Upward comparisons to strangers were associated with a more negative mood than were upward comparisons to close peers. This finding may be due to young women feeling as though they have similar resources to an attractive female stranger or close peer (perhaps unlike a model or celebrity) but do not have any other non-appearance related information to compare themselves on with strangers; this lack of additional information might make the appearance comparison more salient for their mood than upward comparisons to close peers with whom other information is available for comparison (e.g., relationship status, career success). This suggestion is also somewhat consistent with Mussweiler's (2001) selective accessibility model, in which people selectively access knowledge about their similarities to targets they perceive to be similar to themselves and access knowledge about their dissimilarities to targets they perceive to be dissimilar to themselves. Because people have more knowledge about their close peers than strangers, they can draw upon knowledge of similar attributes following an upward appearance comparison to a close peer but may be left to focus on their dissimilarity (e.g., in regard to level of attractiveness) to a stranger (Goethals & Darley, 1987), which may result in a more negative mood. However, this is purely a speculation and further research is needed to examine why upward comparisons to strangers is linked to a more negative mood than close peers.

Attainability did not mediate any relationship between upward comparisons to the target groups and mood or thoughts of dieting and exercising. Perceived attainability of the target's appear-

ance may be less relevant for mood and thoughts of dieting and exercising than appearance satisfaction. That is, there may be a closer specificity match between the constructs of attainability and appearance satisfaction than attainability and mood or thoughts of dieting and exercising (which are more global constructs). However, further research is needed with larger samples to investigate whether this is the case.

4.3. Lateral and downward comparisons to targets and body image

There were few significant findings for lateral and downward comparisons to the different target groups and young women's appearance satisfaction, mood, and thoughts of dieting and exercising. Lateral appearance comparisons to close peers were associated with more appearance satisfaction than when no comparisons were made. Greater perceived similarity with close peers has been linked to better friendship quality and feelings of connectedness (Linden-Andersen, Markiewicz, & Doyle, 2008; Locke & Nekich, 2000). Thus, judging a close peer's appearance to be the same as oneself may be linked to more appearance satisfaction because it confirms their similarity and perhaps reflects on their friendship quality and connection to their peer. Further, downward comparisons to strangers were associated with more appearance satisfaction than when no comparisons were made. As mentioned earlier, female strangers may be seen to have similar resources to young women in our study and the stranger's appearance may be particularly salient given that other information about the person is likely to be unknown, perhaps making downward comparisons to that target group more influential for appearance satisfaction. Alternatively, young women may be more motivated to seek out lateral comparisons to close peers and downward comparisons to strangers when they experience more appearance satisfaction. Further research is needed to determine why lateral and downward comparisons to these specific targets are associated with higher appearance satisfaction and to determine the direction of those relationships.

Leahey and Crowther (2008) found that downward comparisons to peers were associated with less appearance satisfaction than downward comparisons to media images, perhaps because women felt as though the less attractive appearance of their peer was more personally attainable than that of a celebrity or model. Due to the small number of lateral and downward comparisons made to celebrities and models in the present study, we were unable to test this hypothesis. Further EMA research is needed over longer periods of time to capture more downward comparisons to models and celebrities, and to test the role of perceived attainability in the relationship between comparisons to this target group versus other known targets and body image. Experimental research could also help answer this question by exposing women to attractive and unattractive images of different target groups before measuring their body image and their perceived attainability of each target's appearance in the images.

4.4. Limitations and future directions

There are several limitations to the present study that should be noted. First, although EMA methods allow the sampling of experiences as they occur in ecologically valid contexts, the data we examined were correlational in nature, and thus the direction of the relationships found in this study cannot be determined. Future experimental research could examine the impact of comparisons to different targets (both known and unknown to the participant) on young women's body image and perceived attainability of the person's appearance. Second, in order to keep the surveys brief and reduce participant burden, we only asked participants to report on their most recent appearance comparison at each survey. This

limited the amount of information we could collect on the frequency and medium of comparisons to different targets in women's lives and meant that we did not collect enough lateral and downward comparisons to celebrities and models to include this target group in our analyses. Future EMA research could collect data over longer periods or allow participants to report all comparisons made throughout the day to capture more comparison data. Furthermore, reporting on one specific comparison at each survey does not capture the complex nature of comparisons that are likely to occur in real life. For example, young women could make multiple comparisons to different targets on different aspects of appearance in the one social context and all of those comparisons could differentially influence body image. Multimethod research, including qualitative studies, are needed to understand the complexities of comparisons that occur in real life.

Third, similar to previous EMA research (Leahey & Crowther, 2008), the appearance comparison measures were captured by single items to reduce the time taken to complete each survey. Single item measures do not allow for internal reliability to be calculated and future research would benefit from using multi-item measures of these constructs. Fourth, similar to previous EMA studies (e.g., Leahey & Crowther, 2008; Leahey et al., 2011), we focused on relationships between appearance comparisons and thoughts of dieting and exercising. Future research could include a wider variety of thoughts and behaviours related to body image and eating disorders, such as thoughts relating to binging and purging, and interest in cosmetic procedures to enhance one's appearance. Fifth, the present study focused on women and our sample primarily included women who identified as Asian or White. We did not have enough data on comparisons to specific target groups to examine the relationships between comparisons and body image separately based on participants' ethnicity. Previous appearance comparison and body image research with large numbers of Asian and White participants found no difference in the pattern of results for each group (e.g., Fardouly & Vartanian, 2015; Vartanian & Dey, 2013), however it is possible that participants from different ethnicities may make comparisons on different aspects of appearance and perceive the targets' appearance to be more or less attainable. Future research should include larger samples and also examine whether the same associations are found with males and people from different ethnicities.

4.5. Conclusions

The present study examined: (1) the frequency, direction, and medium of appearance comparisons to diverse target groups; (2) the relationship between upward, lateral, and downward comparisons to those targets and young women's appearance satisfaction, mood, and thoughts of dieting and exercising; and (3) the potential mediating role of perceived attainability of the target's appearance on those relationships. Upward comparisons to all targets were associated with less appearance satisfaction, a less positive mood, and more thoughts of dieting and exercising to lose weight than when no comparisons were made. Further, the appearance of celebrities and models was perceived to be less attainable than the appearance of close peers, acquaintances, or strangers, and this in turn was linked to less appearance satisfaction. This was the first study to measure the perceived attainability of different comparison targets, and our results suggest that making upward comparisons to models and celebrities may be linked to poorer body image because women judge such targets' appearance to be less attainable. These results have implications for sociocultural theories of body image and suggest that perceived attainability may be an important mechanism in the link between upward comparisons and body image concerns. However, because the present study was correlational, the direction of these rela-

tionships remains unknown and further investigation is needed into the factors influencing judgements of attainability by young women. Future EMA and experimental research are needed to build upon these findings and further examine the complex relationships between appearance comparisons to different targets, perceived attainability, and body image in women's lives.

Author statement

Jasmine Fardouly: Conceptualization; Methodology; Investigation; Project administration; Formal analysis; Writing - original draft.

Rebecca Pinkus: Conceptualization; Writing - review & editing.

Lenny Vartanian: Conceptualization; Methodology; Supervision; Writing - review & editing.

Declaration of Competing Interest

The authors report no declarations of interest.

References

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society Series B (Methodological), 57*(1), 289–300.

Bocage-Barthélémy, Y., Chatard, A., Jaafari, N., Tello, N., Billieux, J., Daveau, E., & Selimbegović, L. (2018). Automatic social comparison: Cognitive load facilitates an increase in negative thought accessibility after thin ideal exposure among women. *PloS One, 13*(3), Article e0193200 https://doi.org/10.1371/journal.pone.0193200

Brown, F. L., & Slaughter, V. (2011). Normal body, beautiful body: Discrepant perceptions reveal a pervasive 'thin ideal' from childhood to adulthood. *Body Image, 8*(2), 119–125. https://doi.org/10.1016/j.bodyim.2011.02.002

Brown, Z., & Tiggemann, M. (2016). Attractive celebrity and peer images on Instagram: Effect on women's mood and body image. *Body Image, 19*, 37–43. https://doi.org/10.1016/j.bodyim.2016.08.007

Carey, R. N., Donaghue, N., & Broderick, P. (2014). Body image concern among Australian adolescent girls: The role of body comparisons with models and peers. *Body Image, 11*(1), 81–84. https://doi.org/10.1016/j.bodyim.2013.09.006

Cohen, R., & Blaszczynski, A. (2015). Comparative effects of Facebook and conventional media on body image dissatisfaction. *Journal of Eating Disorders, 3*, 23. https://doi.org/10.1186/s40337-015-0061-3

Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders, 16*(4), 363–370. https://doi.org/10.1002/1098-108X(199412)16:4%3C363::AID-EAT2260160405%3E3.0.CO;2-%23

Fardouly, J., & Vartanian, L. R. (2015). Negative comparisons about one's appearance mediate the relationship between Facebook usage and body image concerns. *Body Image, 12*, 82–88. https://doi.org/10.1016/j.bodyim.2014.10.004

Fardouly, J., Pinkus, R. T., & Vartanian, L. R. (2017). The impact of appearance comparisons made through social media, traditional media, and in person in women's everyday lives. *Body Image, 20*, 31–39. https://doi.org/10.1016/j.bodyim.2016.11.002

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*(2), 117–140. https://doi.org/10.1177/001872675400700202

Fitzsimmons-Craft, E. E. (2017). Eating disorder-related social comparison in college women's everyday lives. *The International Journal of Eating Disorders, 50*(8), 893–905. https://doi.org/10.1002/eat.22725

Franzoi, S. L., & Klaiber, J. R. (2007). Body use and reference group impact: With whom do we compare our bodies? *Sex Roles, 56*(3), 205–214. https://doi.org/10.1007/s11199-006-9162-4

Fuller-Tyszkiewicz, M. (2019). Body image states in everyday life: Evidence from ecological momentary assessment methodology. *Body Image, 31*, 245–272. https://doi.org/10.1016/j.bodyim.2019.02.010

Fuller-Tyszkiewicz, M., Chhouk, J., McCann, L.-A., Urbina, G., Vuo, H., Krug, I., & Richardson, B. (2019). Appearance comparison and other appearance-related influences on body dissatisfaction in everyday life. *Body Image, 28*, 101–109. https://doi.org/10.1016/j.bodyim.2019.01.002

GlobalWebIndex. (2020). *GlobalWebIndex's flagship report on the latest trends in social media* Retrieved from. https://www.globalwebindex.com/reports/social

Goethals, G. R., & Darley, J. M. (1987). Social comparison theory: Self-evaluation and group life. In B. Mullen & G. R. Goethals (Eds.), *Theories of group behavior* (pp. 21–47). New York, NY: Springer New York.

Heatherton, T. F., & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology, 60*(6), 895–910. https://doi.org/10.1037/0022-3514.60.6.895

Hofmann, D. A., & Gavin, M. B. (1998). Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management, 24*(5), 623–641. https://doi.org/10.1177/014920639802400504

Jones, D. C. (2001). Social comparison and body image: Attractiveness comparisons to models and peers among adolescent girls and boys. *Sex Roles*, 45(9), 645–664. https://doi.org/10.1023/a:1014815725852

Keery, H., van den Berg, P., & Thompson, J. K. (2004). An evaluation of the Tripartite Influence Model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image*, 1, 237–251. https://doi.org/10.1016/j.bodyim.2004.03.001

Kemp, S. (2021). *Digital 2021: Global overview report* Retrieved from. https://wearesocial.com/au/digital-2021-australia

Knobloch-Westerwick, S., & Romero, J. P. (2011). Body ideals in the media: Perceived attainability and social comparison choices. *Media Psychology*, 14(1), 27–48. https://doi.org/10.1080/15213269.2010.547833

Leahey, T. M., & Crowther, J. H. (2008). An ecological momentary assessment of comparison target as a moderator of the effects of appearance-focused social comparisons. *Body Image*, 5(3), 307–311. https://doi.org/10.1016/j.bodyim.2008.03.003

Leahey, T. M., Crowther, J. H., & Ciesla, J. A. (2011). An ecological momentary assessment of the effects of weight and shape social comparisons on women with eating pathology, high body dissatisfaction, and low body dissatisfaction. *Behavior Therapy*, 42(2), 197–210. https://doi.org/10.1016/j.beth.2010.07.003

Linden-Andersen, S., Markiewicz, D., & Doyle, A.-B. (2008). Perceived similarity among adolescent friends: The role of reciprocity, friendship quality, and gender. *The Journal of Early Adolescence*, 29(5), 617–637. https://doi.org/10.1177/0272431608324372

Liu, Y., Wang, M., Chang, C.-H., Shi, J., Zhou, L., & Shao, R. (2015). Work–family conflict, emotional exhaustion, and displaced aggression toward others: The moderating roles of workplace interpersonal conflict and perceived managerial family support. *The Journal of Applied Psychology*, 100(3), 793–808. https://doi.org/10.1037/a0038387

Locke, K. D., & Nekich, J. C. (2000). Agency and communion in naturalistic social comparison. *Personality & Social Psychology Bulletin, 26*(7), 864–874.

Lockwood, P. (2002). Could it happen to you? Predicting the impact of downward comparisons on the self. *Journal of Personality and Social Psychology*, 82(3), 343–358. https://doi.org/10.1037/0022-3514.82.3.343

Mac Carron, P., Kaski, K., & Dunbar, R. (2016). Calling Dunbar's numbers. *Social Networks*, 47, 151–155. https://doi.org/10.1016/j.socnet.2016.06.003

Manago, A. M., Graham, M. B., Greenfield, P. M., & Salimkhan, G. (2008). Self-presentation and gender on MySpace. *Journal of Applied Developmental Psychology*, 29(6), 446–458. https://doi.org/10.1016/j.appdev.2008.07.001

Martin, M. C., & Gentry, J. W. (1997). Stuck in the model trap: The effects of beautiful models in ads on female pre-adolescents and adolescents. *Journal of Advertising*, 26(2), 19–33. https://doi.org/10.1080/00913367.1997.10673520

McKee, S., Smith, H. J., Koch, A., Balzarini, R., Georges, M., & Callahan, M. P. (2013). Looking up and seeing green: Women's everyday experiences with physical appearance comparisons. *Psychology of Women Quarterly*, 37(3), 351–365. https://doi.org/10.1177/0361684312469792

McLean, S. A., Paxton, S. J., & Wertheim, E. H. (2016). The role of media literacy in body dissatisfaction and disordered eating: A systematic review. *Body Image*, 19, 9–23. https://doi.org/10.1016/j.bodyim.2016.08.002

Mills, J. S., Polivy, J., Herman, C. P., & Tiggemann, M. (2002). Effects of exposure to thin media images: Evidence of self-enhancement among restrained eaters. *Personality & Social Psychology Bulletin*, 28(12), 1687–1699. https://doi.org/10.1177/014616702237650

Mussweiler, T. (2001). Focus of comparison as a determinant of assimilation versus contrast in social comparison. *Personality & Social Psychology Bulletin, 27*, 38–47.

Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide*. Los Angeles, CA: Muthén & Muthén.

Myers, T. A., & Crowther, J. H. (2009). Social comparison as a predictor of body dissatisfaction: A meta-analytic review. *Journal of Abnormal Psychology*, 118, 683–698. https://doi.org/10.1037/a0016763

Nayir, T., Uskun, E., Yürekli, M. V., Devran, H., Çelik, A., & Okyay, R. A. (2016). Does body image affect quality of life?: A population based study. *PloS One*, 11(9), Article e0163290 https://doi.org/10.1371/journal.pone.0163290

Neumark-Sztainer, D., Paxton, S. J., Hannan, P. J., Haines, J., & Story, M. (2006). Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *Journal of Adolescent Health*, 39(2), 244–251. https://doi.org/10.1016/j.jadohealth.2005.12.001

Paxton, S. J., Neumark-Sztainer, D., Hannan, P. J., & Eisenberg, M. E. (2006). Body dissatisfaction prospectively predicts depressive mood and low self-esteem in adolescent girls and boys. *Journal of Clinical Child and Adolescent Psychology*, 35, 539–549. https://doi.org/10.1207/s15374424jccp3504_5

Reaves, S., Bush Hitchon, J., Park, S.-Y., & Woong Yun, G. (2004). If looks could kill: Digital manipulation of fashion models. *Journal of Mass Media Ethics*, 19(1), 56–71. https://doi.org/10.1207/s15327728jmme1901_5

Ridolfi, D. R., Myers, T. A., Crowther, J. H., & Ciesla, J. A. (2011). Do appearance focused cognitive distortions moderate the relationship between social comparisons to peers and media images and body image disturbance? *Sex Roles*, 65(7), 491–505. https://doi.org/10.1007/s11199-011-9961-0

Schutz, H. K., Paxton, S. J., & Wertheim, E. H. (2002). Investigation of body comparison among adolescent girls. *Journal of Applied Social Psychology*, 32(9), 1906–1937. https://doi.org/10.1111/j.1559-1816.2002.tb00264.x

Selig, J. P., & Preacher, K. J. (2008). *Monte Carlo method for assessing mediation: An interactive tool for creating confidence intervals for indirect effects* Retrieved from. http://quantpsy.org/

Smyth, J. M., & Stone, A. A. (2003). Ecological momentary assessment research in behavioral medicine. *Journal of Happiness Studies*, 4(1), 35–52. https://doi.org/10.1023/a:1023657221954

Statistica. (2013). *Daily time spent with select media in Australia from 2007 to 2013* Retrieved from. https://www.statista.com/statistics/361207/time-spent-media-australia/

Stice, E. (2002). Risk and maintenance factors for eating pathology: A meta-analytic review. *Psychological Bulletin*, 128, 825–848. https://doi.org/10.1037/0033-2909.128.5.825

Swami, V., Frederick, D. A., Aavik, T., Alcalay, L., Allik, J., Anderson, D., & Zivcic-Becirevic, I. (2010). The attractive female body weight and female body dissatisfaction in 26 countries across 10 world regions: Results of the International Body Project I. *Personality & Social Psychology Bulletin*, 36(3), 309–325. https://doi.org/10.1177/0146167209359702

Sypeck, M. F., Gray, J. J., & Ahrens, A. H. (2004). No longer just a pretty face: Fashion magazines' depictions of ideal female beauty from 1959 to 1999. *The International Journal of Eating Disorders*, 36(3), 342–347. https://doi.org/10.1002/eat.20039

Tiggemann, M., & Zaccardo, M. (2018). "Strong is the new skinny": A content analysis of #fitspiration images on Instagram. *Journal of Health Psychology*, 23(8), 1003–1011. https://doi.org/10.1177/1359105316639436

van den Berg, P., Thompson, J. K., Obremski-Brandon, K., & Coovert, M. (2002). The Tripartite Influence Model of body image and eating disturbance: A covariance structure modeling investigation testing the mediational role of appearance comparison. *Journal of Psychosomatic Research*, 53, 1007–1020. https://doi.org/10.1016/50022-3999(02)00499-3

Vartanian, L. R., & Dey, S. (2013). Self-concept clarity, thin-ideal internalization, and appearance-related social comparison as predictors of body dissatisfaction. *Body Image*, 10(4), 495–500. https://doi.org/10.1016/j.bodyim.2013.05.004

Vartanian, L. R., Pinkus, R. T., & Smyth, J. M. (2014). The phenomenology of weight stigma in everyday life. *Journal of Contextual Behavioral Science*, 3, 196–202. https://doi.org/10.1016/j.jcbs.2014.01.003

Want, S. C. (2009). Meta-analytic moderators of experimental exposure to media portrayals of women on female appearance satisfaction: Social comparisons as automatic processes. *Body Image*, 6(4), 257–269. https://doi.org/10.1016/j.bodyim.2009.07.008

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. https://doi.org/10.1037//0022-3514.54.6.1063

Zhao, S., Grasmuck, S., & Martin, J. (2008). Identity construction on Facebook: Digital empowerment in anchored relationships. *Computers in Human Behavior*, 24(5), 1816–1836. https://doi.org/10.1016/j.chb.2008.02.012