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A Pilot Evaluation of a Social Media Literacy Intervention to Reduce Risk Factors for Eating
Disorders

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Abstract

Objective: This pilot study investigated the effectiveness of a social media literacy intervention for adolescent girls on risk factors for eating disorders. **Method:** A quasi-experimental pre- to post-test design comparing intervention and control conditions was used. Participants were 101 adolescent girls ($M_{age} = 13.13$, $SD = 0.33$) who were allocated to receive three social media literacy intervention lessons ($n = 64$) or to receive classes as usual ($n = 37$). Self-report assessments of eating disorder risk factors were completed one week prior to, and one week following the intervention. **Results:** Significant group by time interaction effects revealed improvements in the intervention condition relative to the control condition for body image (body esteem - weight; $d = .19$), disordered eating (dietary restraint; $d = .26$) and media literacy (realism scepticism; $d = .32$). **Discussion:** The outcomes of this pilot study suggest that social media literacy is a potentially useful approach for prevention of risk for eating disorders in adolescent girls in the current social media environment of heightened vulnerability. Replication of this research with larger, randomised controlled trials, and longer follow-up is needed.

Keywords: social media; prevention; eating disorder risk factors; adolescent girls; body dissatisfaction

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Engagement in social media by young people is escalating and frequently occupies greater than two hours a day (1). Cross-sectional and longitudinal research has shown, however, that greater use of social networking websites and photo-posting activities on social media are associated with and most likely contribute to the development of risk factors for eating disorders in adolescent girls, including body dissatisfaction, internalisation of appearance ideals, drive for thinness, and dietary restraint (2-4). Interventions to address any negative effects of social media use are needed. This study involved a pilot evaluation of the impact of a social media literacy intervention for adolescent girls aged 11 to 14 years on risk factors for eating disorders.

Social media presents unique pressures on body dissatisfaction and disordered eating. It is a highly visual environment in which appearance ideals and the pursuit of thinness are promoted (5, 6). The interactive nature of social networking provides boundless opportunities for appearance comparisons and appearance-related interactions with peers (7). Indeed, the interactive nature of social media appears to contribute to increases in disordered eating (8).

Prevention approaches to address the contribution of social media to body dissatisfaction need to consider both the idealised appearance-focus of social media and the nature of peer interactions on social media, which frequently include online appearance conversations and peer comparisons, and the interaction between these two factors (5, 6). An intervention approach which combines media literacy and peer components for the social media context may offer an appropriate method for

prevention. Media literacy aims to enhance critical thinking and scepticism about media and increase proficiency in constructing media, to reduce its persuasive influence (9). In the social media context, critical thinking focuses on understanding motivations for friend and celebrity postings and the selection and modification of images to present one's "best" self. Peer approaches target the peer environment and peer interactions as risk factors for body dissatisfaction and disordered eating and aim to improve the peer appearance culture and reduce pressure to adhere to appearance ideals (9). Randomised controlled trials of school-based programs incorporating these components have found positive outcomes for body dissatisfaction and disordered eating (e.g., 9, 10, 11) but such approaches have not previously been evaluated in the context of social media, nor have they identified the mechanisms accounting for program effects.

We aimed to evaluate the effectiveness of a succinct pilot classroom-based social media literacy intervention approach for eating disorder risk factors with adolescent girls. It is a selective intervention as it is directed at a high risk group, i.e., adolescent girls. We hypothesised that intervention compared to control participants would have improvements in body image and eating outcomes at post-program.

Method

Participants

Participants were 101 early adolescent girls ($M_{age} = 13.13$, $SD = 0.33$) recruited from one co-educational public and one private girls' secondary school in Melbourne, Australia. Participating schools were of similar status to schools that declined the invitation to participate. Most participants reported they were born in Australia or New Zealand (93%). The remainder were born in south-east Asia (3%), the United Kingdom

(2%), South Africa (1%), or the United States (1%). There were no exclusion criteria.

Figure 1 shows participant flow. Data were not available for the total number of students invited to participate.

Measures

Participants completed self-report assessment measures. All measures had evidence supporting their reliability and validity in adolescent samples and had satisfactory internal consistency ($\alpha = .72$ to $.95$) in the current study. Three measures of body image were the appearance and weight subscales of the Body Esteem Scale (12) and overvaluation of shape and weight (2 items) from the Eating Disorder Examination – Questionnaire (13). One indicator of disordered eating, dietary restraint, was assessed with the Dutch Eating Behaviour Questionnaire (14). Measures of correlates of body image were internalisation of the thin-ideal (15), upward appearance comparison (16), appearance conversations (17), fear of fat (18), and fear of negative appearance evaluation (19). Media literacy variables were realism scepticism and critical thinking about appearance focused media (20).

Intervention

The *Boost Body Confidence and Social Media Savvy* (Boost) intervention consisted of three 50-minute lessons adapted from the Happy Being Me intervention (9, 10) to reflect specific challenges posed by social media. Lessons were experiential and interactive and aimed to: increase media literacy relating to the influential and targeted nature of advertising on social media, critique digitally manipulated images on social media, reduce appearance comparisons with social media images, develop resilience to upward comparisons on social media, reduce frequency of peer appearance-related

commenting on social media, and reduce focus on and importance of appearance in social media interactions. Facilitator manuals were used to ensure consistency in lesson delivery across classes.

Procedure

The study was approved by the University Human Ethics Committee and Department of Education and written informed consent was obtained from principals and parents. Participants provided assent. Participants were allocated to intervention or control conditions based on class timetable feasibility. In three separate class groups, all intervention participants received the Boost lessons delivered weekly by two psychology postgraduate students (see Figure 1). Control participants attended their usual classes. Boys from the co-educational classes were not present during Boost lessons and attended classes as usual. Data collection took place the week before and the week after intervention lesson delivery and on the same schedule for control participants.

Data Analysis

Intent-to-treat analyses, using baseline observation carried forward, were used to account for missing values. This method is conservative as it assumes no change in scores among individuals who did not complete the post-test assessment. All variables were normally distributed. Mixed between-within repeated measures analyses of variance, in which group by time interaction effects were of primary interest, were conducted. Post-hoc Bonferroni adjusted pairwise comparisons of mean differences in scores within groups from baseline to post-program were used to examine significant interaction effects.

Results

Participant Characteristics

Independent samples *t*-tests compared baseline scores on outcome variables for intervention and control groups. There were no significant differences between groups at baseline (all $ts < 1.89$, $p > .05$) suggesting there was no selection bias between groups based on those measures.

Intervention Effects

Table 1 shows descriptive and summary statistics for repeated measures ANOVAs. As hypothesised, significant group by time interaction effects indicating differences between groups from baseline to post-program were observed for body esteem (weight), dietary restraint, and realism scepticism. Effect sizes were small to medium. Post-hoc examination of interaction effects with Bonferroni adjusted pairwise comparisons showed that the intervention group had significant improvements in body esteem (weight; $d = .19$), dietary restraint ($d = .26$) and realism scepticism ($d = .32$) from baseline to post-program. There were no significant improvements over time in the control group for these variables.

Significant main effects of time were observed for overvaluation of shape and weight, upward appearance comparison, fear of fat, and fear of negative appearance evaluation. Effect sizes were small to medium. There were no significant group main effects.

Discussion

This pilot study is the first to address the need to build resilience in adolescent girls to the negative effects of engagement in social media through a three-lesson social media literacy intervention. Hypotheses were partially supported with favourable effects

of Boost participation, relative to a no intervention control group, for body image (body esteem - weight), disordered eating (dietary restraint), and media literacy (realism scepticism).

Our findings indicate that a combined media literacy - peer influence approach can help address the unique context of social media in which peer interactions and a highly visual, readily accessible, format create appearance pressures for young people (5, 6). Being the first evaluation of a social media-literacy intervention, it is not possible to compare outcomes with similar previous research. However, small to medium effect size improvements were consistent with previous school-based body image interventions that included media literacy material without focusing on social media (9-11).

Interestingly, a reduction in dietary restraint was observed even though the intervention did not address dieting. This, along with improvements in body esteem, suggests that participants felt reduced pressure to alter their appearance to align with appearance ideals, even if their endorsement (internalisation) of the thin ideal had not changed.

Importantly, improvement in realism scepticism, a media literacy variable, was observed, consistent with previous media literacy interventions (9). Although mediation analyses to establish if change in the mediator preceded change in outcome variables could not be conducted in this pre-post design study, this outcome suggests that change in media literacy may be one mechanism by which improvement in body image and related variables was achieved (9).

Study limitations include that participants were not randomly allocated to condition due to school timetable constraints; however, between-group baseline comparisons suggested no sampling bias. Within-school allocation of classes to condition

may have led to cross-over effects. The evaluation did not include follow-up assessments examining maintenance of effects. The trial was conducted with girls only, so applicability to co-educational settings needs evaluation. Development of relevant content for delivery to boys would enhance uptake in schools.

This pilot study is the first to examine prevention of risk factors for eating disorders focussing on social media. Findings indicate the potential of addressing social media engagement in future prevention interventions.

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Disclosure of Conflicts

The authors have no conflicts to disclose.

Table 1

Descriptive and Summary Statistics from Repeated Measures ANOVAs Comparing Intervention and Control Conditions

| | Intervention group (n = 64) | | Control group (n = 37) | | Interaction Effects | | Main Effects | | | |
|--|--------------------------------|------|---------------------------|------|---------------------|------------|-------------------|------------|------|------------|
| | M | SD | M | SD | F | η_p^2 | F | η_p^2 | F | η_p^2 |
| | | | | | 0.50 | 0.005 | 3.95 [†] | 0.038 | 1.93 | 0.019 |
| Body Esteem Scale - Appearance ^b | | | | | | | | | | |
| Baseline | 3.23 | 0.97 | 3.51 | 0.86 | | | | | | |
| Post-intervention | 3.35 | 0.96 | 3.57 | 0.79 | | | | | | |
| Pairwise comparison mean difference ^c | -0.13* | | -0.06 | | | | | | | |
| Body Esteem Scale - Weight ^b | | | | | 4.09* | 0.040 | 5.31* | 0.051 | 2.49 | 0.025 |
| Baseline | 3.21 | 1.17 | 3.65 | 1.05 | | | | | | |
| Post-intervention | 3.41 | 1.03 | 3.66 | 0.99 | | | | | | |
| Pairwise comparison mean difference ^c | -0.21** | | -0.01 | | | | | | | |
| Overvaluation of weight/shape ^a | | | | | 2.40 | 0.024 | 5.30* | 0.051 | 0.02 | <0.001 |
| Baseline | 2.46 | 2.07 | 2.22 | 2.00 | | | | | | |
| Post-intervention | 1.98 | 1.92 | 2.12 | 1.97 | | | | | | |
| Pairwise comparison mean difference ^d | 0.48** | | 0.10 | | | | | | | |
| Dietary restraint | | | | | 6.67* | 0.063 | 3.46 [†] | 0.034 | 0.34 | 0.003 |
| Baseline | 2.37 | 1.06 | 2.10 | 0.90 | | | | | | |
| Post-intervention | 2.11 | 0.98 | 2.14 | 1.05 | | | | | | |
| Pairwise comparison mean difference ^d | -0.27*** | | -0.04 | | | | | | | |
| Internalisation ^a | | | | | 1.36 | 0.014 | 0.01 | <0.000 | 0.13 | 0.001 |
| Baseline | 15.36 | 4.89 | 14.62 | 5.34 | | | | | | |
| Post-intervention | 15.00 | 4.69 | 15.05 | 4.81 | | | | | | |
| Pairwise comparison mean difference ^d | 0.36 | | -0.43 | | | | | | | |
| Upward appearance comparison ^a | | | | | 0.01 | <0.001 | 10.61** | 0.097 | 0.11 | 0.001 |

| | Intervention group | | Control group | | Interaction Effects | | Main Effects | | | |
|---|--------------------|------|-------------------|------|---------------------|------------|-------------------|------------|-------------------|------------|
| | (n = 64) | | (n = 37) | | F | η_p^2 | Time | | Group | |
| | M | SD | M | SD | | | F | η_p^2 | F | η_p^2 |
| Baseline | 3.17 | 1.32 | 3.10 | 1.30 | | | | | | |
| Post-intervention | 2.86 | 1.22 | 2.77 | 1.30 | | | | | | |
| Pairwise comparison mean difference ^d | 0.31* | | 0.33* | | | | | | | |
| Appearance conversations | | | | | 2.24 | 0.022 | 3.56 [†] | 0.035 | 0.24 | 0.002 |
| Baseline | 2.20 | 1.03 | 2.01 | 0.98 | | | | | | |
| Post-intervention | 1.97 | 0.97 | 1.98 | 0.94 | | | | | | |
| Pairwise comparison mean difference ^d | 0.23** | | 0.03 | | | | | | | |
| Fear of fat | | | | | 2.21 | 0.022 | 10.63** | 0.097 | 0.92 | 0.009 |
| Baseline | 21.27 | 8.27 | 22.00 | 8.24 | | | | | | |
| Post-intervention | 18.73 | 7.87 | 21.05 | 8.30 | | | | | | |
| Pairwise comparison mean difference ^d | 2.53* | | 0.95 | | | | | | | |
| Fear of negative appearance evaluation ^a | | | | | 0.01 | <0.001 | 9.01** | 0.084 | 0.31 | 0.003 |
| Baseline | 18.66 | 7.60 | 17.86 | 7.65 | | | | | | |
| Post-intervention | 17.29 | 7.50 | 16.43 | 7.11 | | | | | | |
| Pairwise comparison mean difference ^d | 1.36* | | 1.43 [†] | | | | | | | |
| Realism scepticism ^b | | | | | 4.00* | 0.044 | 0.28 | 0.003 | 3.46 [†] | 0.038 |
| Baseline | 7.58 | 1.76 | 8.57 | 1.68 | | | | | | |
| Post-intervention | 8.10 | 1.51 | 8.27 | 1.70 | | | | | | |
| Pairwise comparison mean difference ^c | -0.52* | | 0.30 | | | | | | | |
| Critical thinking about appearance media ^b | | | | | 1.11 | 0.011 | 0.42 | 0.004 | 3.68 [†] | 0.040 |
| Baseline | 15.53 | 7.82 | 13.51 | 5.75 | | | | | | |
| Post-intervention | 16.56 | 8.34 | 13.27 | 5.73 | | | | | | |
| Pairwise comparison mean difference ^c | -1.03 | | 0.24 | | | | | | | |

Note. η_p^2 effect sizes of 0.01 = small; 0.06 = medium; 0.14 = large. Pairwise comparison mean difference scores were computed from post-hoc Bonferroni adjusted comparisons conducted in mixed between-within repeated measures ANOVA.

^a Lower scores more desirable; ^b Higher scores more desirable; ^c Negative scores more desirable; ^c Positive scores more desirable

* $p < .05$; ** $p < .01$; *** $p < .001$; [†] $p < .10$