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A Randomized Controlled Trial of the Effectiveness of Virtually Delivered Body Project (vBP) Groups to Prevent Eating Disorders

Ata Ghaderi
Karolinska Institutet and Stockholm Centre for Eating Disorders, Stockholm, Sweden

Eric Stice
Stanford University

Gerhard Andersson
Linköping University and Karolinska Institutet

Johanna Enö Persson
Karolinska Institutet

Elin Allzén
Stockholm University

Objectives: To investigate the effectiveness of Body Project groups delivered virtually (vBP) by peer educators for prevention of eating disorders. ***Method:*** In a randomized controlled trial vBP groups (N = 149) were compared with a placebo (expressive writing, EW: N = 148) over 24-month follow-up and to a waitlist control condition (N = 146) over 6-month follow-up among females (15–20 years old) with body image concerns. The primary outcome was incidence of eating disorder onset over 2-year follow-up measured by blinded diagnostic interviews. Waitlist participants were offered the vBP after 6 months. ***Results:*** The incidence of eating disorders onset over 24 months follow up were 3 in vBP (2.0%) and 13 in EW (8.8%), a significant difference; Hazard Ratio (Experiment B) = 0.26, 95% confidence interval (CI) [0.075, 0.92], p = .037. Incidence of eating disorder onset in vBP participants was 77% less than in EW participants. The vBP participants generally showed significantly greater reduction in eating disorder symptoms, clinical impairment, body dissatisfaction, and internalization of thin ideal compared with the waitlist participants at postintervention and 6-month follow-up, and in eating disorder symptoms, restraint, body dissatisfaction, and internalization of thin ideal compared with the EW participants at postintervention, and 6-, 12-, 18-, or 24-months follow-up. EW participants reported significantly greater reduction in clinical impairment and body dissatisfaction at postintervention compared with the waitlist participants. ***Conclusions:*** The present reduction in the incidence of eating disorders is notable given that the intervention was implemented virtually, rather than in-person. The vBP might be a viable option for future evaluation of scalable prevention of eating disorders.

What is the public health significance of this article?
Results suggests that the Body Project prevention program, when delivered through virtual groups (vBP), significantly reduces risk factors, eating disorder symptoms, and future eating disorder onset. This format of delivery has the potential to allow broader implementation of this effective eating disorder prevention program.

Keywords: eating disorders, prevention, incidence, scalability, bulimia nervosa

Ata Ghaderi, Division of Psychology, Department of Clinical Neuroscience, Karolinska Institutet, and Stockholm Centre for Eating Disorders, Stockholm County Council, Stockholm, Sweden; Eric Stice, Department of Psychiatry and Behavioral Sciences, Stanford University; Gerhard Andersson, Department of Behavioural Sciences and Learning, Linköping University, and Department of Clinical Neuroscience, Karolinska Institutet; Johanna Enö Persson, Department of Clinical Neuroscience, Karolinska Institutet; Elin Allzén, Stockholm University Brain Imaging Centre, Stockholm University.

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Correspondence concerning this article should be addressed to Ata Ghaderi, Division of Psychology, Department of Clinical Neuroscience, Karolinska Institutet, Nobels vag 9, 171 77 Stockholm, Sweden. E-mail: ata.ghaderi@ki.se

Eating disorders are associated with functional impairment, chronicity, comorbidity, and mortality (Arcelus, Mitchell, Wales, & Nielsen, 2011; Klump, Bulik, Kaye, Treasure, & Tyson, 2009). As 80% of those with eating disorders do not receive treatment (Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011) and current evidence-based treatments are efficacious for less than 50% of patients (Hay, 2013), prevention of eating disorders is a key public health priority.

Prevention should be based on a mechanistic approach (Holmes et al., 2018), as the knowledge on mechanisms of change helps to devise interventions that are more direct, precise, and effective (Kazdin, 2014). Such interventions might also be more scalable than multimodal and complex interventions. Longitudinal studies have identified a number of risk factors that predict future onset of eating disorders, such as pursuit of the thin beauty ideal, body dissatisfaction, and dieting (e.g., Ghaderi & Scott, 2001; Jacobi et al., 2011; The McKnight Investigators, 2003; Rohde, Stice, & Marti, 2015; Stice, Gau, Rohde, & Shaw, 2017). Reducing such risk factors should reduce the attitudinal or behavioral symptoms of eating disorders as shown in several prevention programs such as the Body Project (Stice, Marti, Shaw, & Rohde, 2019), Student Bodies (Taylor et al., 2006), Healthy Weight (Stice, Marti, Spoor, Presnell, & Shaw, 2008), Planet Health (Austin, Field, Wiecha, Peterson, & Gortmaker, 2005), or Weigh to Eat (Neumark-Sztainer, Butler, & Palti, 1995). Some of these interventions are universal (e.g., Weight to Eat), while the others are selective (e.g., Body Project). In addition, the mechanisms of action include media literacy, psychoeducation, dissonance induction, or cognitive–behavioral strategies. Although these prevention programs have reduced eating disorder risk factors, dissonance-based interventions show the most robust evidence of efficacy for selective prevention (Le, Barendregt, Hay, & Mihalopoulos, 2017; H. J. Watson et al., 2016). More specifically, the Body Project is the only intervention that has reduced eating disorder symptoms and future eating disorder onset, has outperformed multiple credible alternative interventions, and produced effects in trials from independent teams (Becker, Smith, & Ciao, 2005; Halliwell & Diedrichs, 2014; Stice, Marti, et al., 2008; Stice, Rohde, Shaw, & Gau, 2017). In fact, Body Project has produced significantly larger reductions in risk factors and eating disorder symptoms than seven alternative interventions, including an educational video, expressive writing, a media advocacy prevention program, a psychoeducational prevention program, a healthy weight prevention program, a low-dissonance version of the Body Project, and an Internet-delivered version of the Body Project (Stice et al., 2019).

In the Body Project young women with body image concerns are given an opportunity to collectively discuss the negative effects of pursuing the thin beauty ideal, which induces cognitive dissonance that prompts a reduction in pursuit of this ideal because people are motivated to align their attitudes with their publicly displayed behavior (Stice, Marti, et al., 2019). Consistent with this intervention theory, reductions in thin-ideal internalization mediate the effects of the Body Project on eating disorder symptom reduction (e.g., Seidel, Presnell, & Rosenfield, 2009; Stice, Presnell, Gau, & Shaw, 2007) and the Body Project reduces brain reward region response to thin models (Stice, Yokum, & Waters, 2015). Further, versions of the Body Project designed to maximize dissonance induction produced larger reductions in eating disorder symptoms than versions designed to minimize dissonance induction, despite similar intervention content (Green, Scott, Diyankova, & Gasser, 2005; McMillan, Stice, & Rohde, 2011).

Notwithstanding its evidence of efficacy, the reach of the Body Project is limited as it is delivered in-person by trained facilitators (e.g., college counselors or undergraduate peer educators) in high school or college settings with groups of students. Consequently, Stice and colleagues developed an individual, unmoderated Internet-implemented version of the Body Project (Stice, Rohde, Durant, & Shaw, 2012), but the effects were weaker and showed less persistence over follow-up compared with the group face-to-face Body Project. Theoretically, lack of the group context in the Internet version of the Body Project might explain the weaker effects. The group context putatively provides greater public accountability, which is critical for dissonance induction (Green et al., 2005). To improve potential scalability, and to retain the group interactions between participants and facilitators, we evaluated the effects of virtually implemented Body Project groups. Peer-leaders (undergraduates in Psychology) were trained to deliver the intervention to small groups (4–6 participants). Virtual group meetings make it possible for anybody to attend regardless of where they live, as long as they have Internet connectivity. In fact, Telemedicine, which encompasses different approaches that use modern technology to increase access to health care services, is being evaluated within various fields of medicine (for a review see: Ekeland, Bowes, & Flottorp, 2010), including psychiatry (Hilty, Sunderji, Suo, Chan, & McCarron, 2018). Telepsychiatry or telepsychology was implemented early on in the treatment of eating disorders (Bakke, Mitchell, Wonderlich, & Erickson, 2001; Mitchell et al., 2008; Simpson et al., 2003), and some studies have used the Internet as the medium for delivering digital prevention programs (Taylor et al., 2006) and treatments for eating disorders (Aardoom, Dingemans, Spinhoven, & Van Furth, 2013). Given the accumulated knowledge on telemedicine, the use of modern technologies in delivering prevention interventions should be evaluated. Such strategies combined with a theoretically sound prevention program, targeting the most suitable population may produce favorable outcome.

Because prospective studies have established that age 15–20 is the peak developmental period of risk for eating disorder onset (Lewinsohn, Striegel-Moore, & Seeley, 2000; Stice, Marti, & Rohde, 2013) and young people from the age of 15 may participate in such research without parental consent in Sweden, the lower end of the age span was decided to be set at 15. Furthermore, we offered all participants the option of completing the virtual groups anonymously if they desired, with the intent of reducing stigma and shame. The Body Project has shown efficacy in reducing eating disorder risk factors and symptoms in trials conducted in the United States, United Kingdom, Brazil, Mexico, and China (Stice et al., 2019). Testing whether a prevention program produces effects in multiple countries is critical for establishing that it produces reproducible results.

Aims of the Study

The current study investigated the effectiveness of virtually delivered Body Project (vBody Project: vBP) groups in a randomized controlled trial. The primary outcome was the incidence of eating disorders measured by a clinical diagnostic interview over a 2-year follow-up. Secondary outcomes were eating disorder symp-

toms and risk factors. This report describes the results of this trail, including short- and long-term outcomes.

Method

Study Design and Participants

Participants were randomly assigned to one of three arms: (a) Body Project delivered through virtual groups (vBP), (b) an expressive writing alternative intervention (EW), or (c) a waitlist control condition. As this was the first test of virtual delivery of the Body Project, a waitlist control condition was included to facilitate comparison of the acute effects of the vBP against those produced in trials of in-person Body Project groups that used minimal intervention comparison conditions. The waitlist condition was offered the vBP after 6 months because a longer waitlist period would be difficult to justify from an ethics perspective, and comparisons with a credible placebo across time permits stronger inferences because it controls for the effects of demand characteristics and expectancies. Participants were assessed at baseline, postintervention, and at 6-, 12-, 18-, and 24-month follow-ups (except waitlist controls who only completed the first three assessments).

Inclusion criteria were to be female with body image concerns (a subjective sense of body dissatisfaction), 15–20 years old, and fluent in Swedish. Exclusion criteria were a current *Diagnostic and Statistical Manual for Mental Disorders-Fifth Edition* (*DSM–5*) diagnosis of eating disorders with the exception of unspecified eating disorders, concurrent psychological treatment, severe depression, suicidality, or other serious conditions (e.g., bipolar disorders or schizophrenia) that required psychiatric care. A total of 1,678 individuals declared interest to participate, of which 1,242 were assessed for eligibility (see Figure 1). At the final stage, 443 were eligible and randomized using a list obtained from the Re-

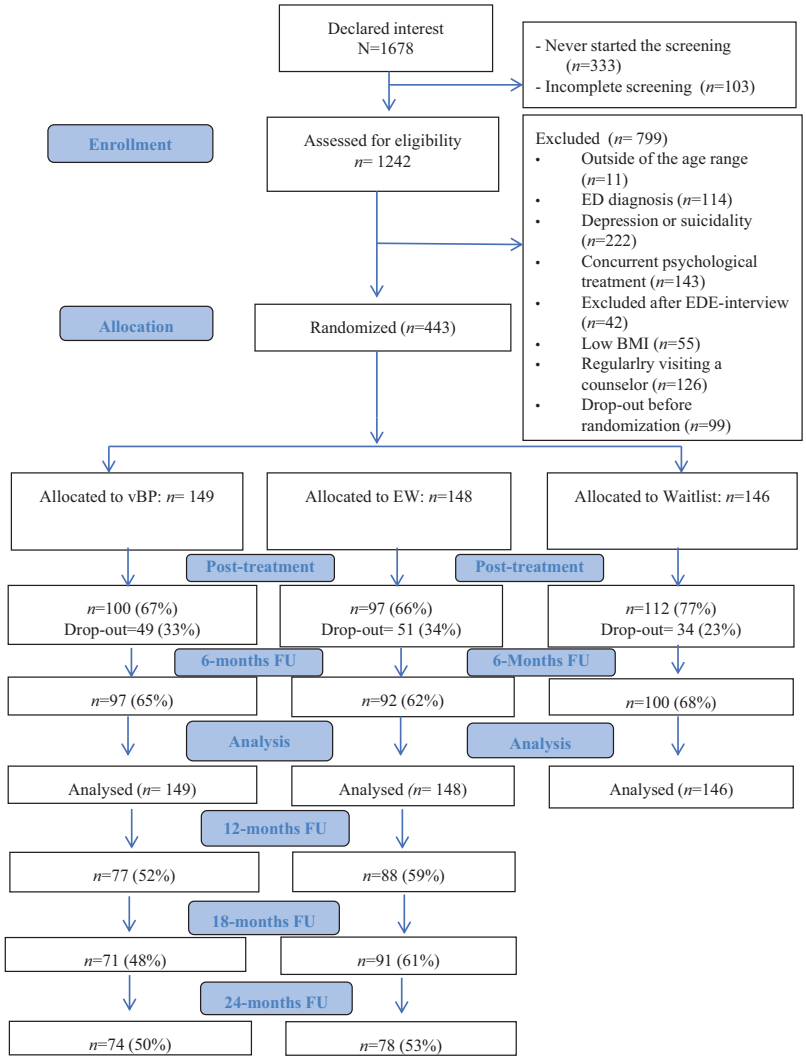

Figure 1. Flowchart of the participants. The numbers analyzed at 12-, 18-, and 24-month follow-up were 149 in the vBP and 148 in the EW. vBP = virtually delivered Body Project; EW = expressive writing. See the online article for the color version of this figure.

search Randomizer (www.randomizer.org). As soon as a set of three participants were ready for enrolment, the research coordinator sent their codes to the PI, who declared the condition for each participant according to the randomisation list. Follow-up clinical interviews were done by trained research assistants who were blind to condition allocation. Some facilitators who implemented the vBP were involved in the baseline assessment only, before the participants were allocated to a condition. Characteristics of the participants are presented in Table 1.

Procedure

The study was approved by the Regional Ethics Board in Stockholm (Dnr. 2015/841–31/2 and 2015/2051–32) and registered on ClinicalTrials.gov (NCT02567890). A website for the research project was created with information about the study. The website, ads and banners that were used for recruitment described the trial as a comparison of body acceptance interventions. To reach the target population (i.e., young females with body image concerns), two recurrent questions in all recruitment material were: "Do you have body image concerns?" and "Are you dissatisfied with your body?" Several recruitment strategies were used, such as contacting all high school principals in Sweden, and asking to put up ads, and sending psychology students as project ambassadors to schools, and Facebook advertisements, though recruitment was slow. We increased the age range from 15–18 to 15–20 years to have a broader recruitment base, since the Body Project has produced reductions in eating disorder symptoms and/or future eating disorder onset for participants in this age range (Stice, Rohde, et al., 2017; Stice, Shaw, Becker, & Rohde, 2008). Next, we consulted with experts in social media, who built a new website, and created suitable banners to use for advertisement on Instagram and Facebook. With this strategy more than 70,000 potential participants were exposed to our calls for participation within 24 hr. Given the a priori power analyses, previous studies and our capacity, the aim was to include 400 participants in the study. We terminated the recruitment after 443 participants were recruited.

Participants declared interest through the website of the study (www.sbodyproject.se). Those meeting inclusion criteria were directed to another secure platform and asked to provide informed consent for participation, and to complete a questionnaire. The platform (iTerapi) has high security (Vlaescu, Alasjö, Miloff, Carlbring, & Andersson, 2016). All data were encrypted. Participants completed questionnaires at baseline and postintervention and at 6-, 12-, 18-, and 24-month follow-ups, and the Eating Disorders Examination interview (EDE; Fairburn, 2008) at baseline, and at 6-, 12-, and 24-month follow-ups. Those with a current diagnosis of eating disorders, or other psychiatric conditions in need of psychiatric care were informed about how to receive professional help and excluded (see Figure 1).

The project coordinator and a doctoral student received training in delivery of the Body Project from the second author. Psychology undergraduate students were recruited as group leaders, and delivered the intervention after training. They were supervised and recorded their sessions for both supervision and later fidelity ratings. Psychology undergraduates were also trained to do the EDE interview. They were closely supervised, and were required to show agreement ($\kappa > .80$) with expert rating based on recorded interviews. They were also invited to join the training of new student assessors in conducting EDE interviews for refresher training.

As soon as 5–6 participants were randomized to the vBP condition, the research coordinator formed a group and one of the trained group leaders received contact information for participants to schedule a first meeting. They were instructed to download and install the Google Hangouts app. They were told they could participate anonymously if they wished. Those randomized to the expressive writing or waitlist condition were so informed and received information on how to complete expressive writing exercises, or remained on a waitlist for 6 months before being offered the vBP. Although the waitlist participants received the intervention after 6 months, they were not included in the vBP condition in these analyses.

Interventions

The vBody Project consisted of four weekly 1-hr sessions across four consecutive weeks as described in Stice and colleagues (Stice,

Table 1
The Characteristics of Participants in the Virtual Body Project (n = 149), Expressive Writing (n = 148), and the Wait-List Control Condition (n = 146)

Demographics	Virtual Body Project	Expressive writing	Wait-list control
Mean age (*SD*)	17.3 (1.4)	17.4 (1.5)	17.1 (1.4)
Place of residency: *n* (%)			
One of four major cities	79 (53.0%)	78 (52.7%)	68 (46.5%)
Other big cities	27 (18.1%)	31 (20.9%)	35 (24.0%)
Small cities or country side	43 (28.9%)	39 (26.4%)	43 (29.5%)
Living conditions			
Alone	10 (6.7%)	8 (5.4%)	5 (3.4%)
With parents	123 (82.6%)	128 (86.5%)	135 (92.5%)
With friends, partner, or other	16 (10.7%)	12 (8.1%)	6 (4.1%)
Occupation			
Student	134 (89.9%)	138 (93.2%)	130 (89%)
Other (employed, etc.)	15 (10.1%)	10 (6.8%)	16 (11%)
Education			
Compulsory school	15 (10.7%)	17 (11.5%)	26 (17.8%)
High school	122 (81.9%)	114 (77.0%)	111 (76%)
Other (university etc.)	11 (7.4%)	17 (11.5%)	9 (6.2%)

Rohde, et al., 2017). In Session 1, the participants collectively defined the thin ideal, discussed costs of pursuing it, and were asked to complete home exercises (writing a letter to a younger girl about costs of pursuing the thin ideal, and standing in front of a mirror and recording positive self-qualities). In Session 2, they reviewed the homework exercises, and their positive qualities lists, read their letter, dissuaded the facilitator out of pursuing the thin ideal in role-plays and were also assigned more home exercises (generating a top-10 list of things females of the same age as them can do to challenge the current thin or beauty ideal, and writing a letter to someone who has pushed them to pursue the thin ideal, how this affected them, and how they would react to it now). In Session 3 participants reviewed home exercises, completed role-plays wherein they diverted thin-ideal comments posed by the facilitator, discussed personal body image concerns, and were assigned further home exercises (doing body activism activities and engaging in behaviors that challenge their body image concerns). In Session 4, participants discussed the home exercises, discussed how to resist future pressure to be thin by discussing and role-playing responses to such pressure, discussed how the group has been beneficial to them, committed to engaging in some self-affirmation exercises, writing a letter to a younger girl about avoiding body image concerns and engage in further body activism. All the sessions started by a brief statement about the voluntary nature of the participation in the program. In the process of translation and adaptation of the manual for delivery through virtual group for Swedish context, only minimal changes were made to improve cultural fit. As all the sessions were recorded, participants who missed a session were provided the opportunity to watch the missed session before joining the next one. No participants completed the intervention using recorded sessions only. In total, 72% of participants attended at least half the sessions.

The expressive writing conditions consisted of brief written instructions sent to participants weekly over a 1-month period, which asked participants to write about their thoughts, images, emotions, and whatever comes to their mind in relation to their body for 40 min. If they were not able to come up with content to write about for 40 min, they were asked to repeat what they had written with the aim of emotional processing and getting some distance from the content. An unmoderated expressive writing condition was used because an earlier trial (Stice, Marti, et al., 2008; Stice, Shaw, Burton, & Wade, 2006) found that it was perceived as equally credible to the Body Project. In addition, an earlier trial found that participants in the expressive writing condition showed significantly greater reductions in thin-ideal internalization and eating disorder symptoms compared with participants in an assessment-only control condition and there was no evidence of any adverse effects (e.g., on negative affect; Stice et al., 2006). Data on the adherence in the expressive writing condition revealed that participants elected to write for an average of 22 min per week.

A brief written booster reminder was sent to the participants at the 12-month follow-up, asking them to keep in mind the issues raised during the group intervention (e.g., the costs of the thin ideal, how to act against such an ideal, etc.), or for the expressive writing condition to take some time to write down whatever thoughts, feelings, sensations, or images that come to their mind in relation to their body. In total, 68 (92%) of the 74 in the vBP who still were in the trial, and 75 (85%) of 88 in the EW completed the booster assignment. At this time, participants were also asked to rate the credibility of the intervention and their expectancies of the long-term effects of them, based on the slightly modified versions of the Credibility/Expectancy Questionnaire (Devilly & Borkovec, 2000).

Measures

Eating Disorders Examination (EDE). The primary outcome was the incidence of any *DSM–5* diagnoses of eating disorders over 2-year follow-up, as assessed by the EDE via phone. The EDE (Fairburn, 2008) is widely viewed as the "gold standard" for assessment of eating disorders (e.g., Guest, 2000; Rosen, Vara, Wendt, & Leitenberg, 1990). The EDE consists of a substantial number of questions, some of which are obligatory, and can be supplemented by additional questions of the interviewer's choice. In the current study, only the diagnostic items were administered rather than the full EDE that includes subscales. The following *DSM–5* diagnoses were assessed by means of the EDE: anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorders (BED), and Other Specified Feeding or Eating Disorders (OSFED; which included subthreshold levels of AN, BN, and BED, as well as purging disorder PD). The time frame of the EDE was adapted at the 6, 12, and 24-month follow-up, to capture the entire period since the previous assessment. To obtain an interviewer-based measure of eating disorder symptoms, the items on the EDE were also standardized and summed into a composite score. Cronbach's alpha for the composite score was .82, and the observed range was between −18.2 and 42.1.

Eating Disorder Diagnostic Scale (EDDS). The EDDS (Stice, Telch, & Rizvi, 2000) was used to measure self-reported symptoms of eating disorders in the past month at each assessment. It consists of 22 items that capture the diagnostic symptoms of eating disorders according to the *DSM–5* (American Psychiatric Association, 2013) using various response formats, such as frequency counts and Likert-scales. It has shown good psychometric properties (Stice, Fisher, & Martinez, 2004; Stice et al., 2000). Items on the EDDS can be standardized and averaged to provide a continuous composite measure of eating disorder symptoms. Cronbach's alpha was .88, and the observed range was between −1.0 and 2.7.

The Positive and Negative Affect Schedule–Revised (PANAS). The PANAS (D. Watson & Clark, 1992) was used to measure positive and negative affect. We focused on negative affect only to be consistent with past trials of the Body Project. Participants were asked to rate the extent to which they have felt different positive and negative emotions (from 1 = *not at all/very slightly* to 5 = *extremely*) during the past week. The PANAS has shown good psychometric properties in terms of internal consistency, test–retest reliability, convergent and predictive validity, and sensitivity to change (D. Watson & Clark, 1992). Internal consistency in the current study was .87 for negative affect and .82 for positive affect. The total score of PANAS ranges from 10 to 50 with higher scores indicating more positive or negative affect. In line with previous trials of the Body Project, only negative affect was analyzed.

Restraint Subscale of the Eating Disorders Examination Questionnaire (EDE-Q-r). The EDE-Q-r is one of the four subscales of the EDE-Q (Fairburn, 2008; Welch, Birgegård,

Parling, & Ghaderi, 2011). The subscale consists of five questions to which the participants respond on a 7-point scale that corresponds to the number of days out of the past 28 days during which they have been engaged in such behaviors. The Psychometric properties of the EDE-Q has been investigated in many studies that generally show satisfactory results such as acceptable to excellent internal consistency and test–retest reliability of its four subscales (e.g., Bardone-Cone & Boyd, 2007; Luce & Crowther, 1999; Peterson et al., 2007). The internal consistency of the EDE-Q-r in the current study was .86. The total score of the EDE-Q-r ranges from zero to six, with higher scores indicating more restraint.

Clinical Impairment Assessment (CIA). To measure the impact of eating disorders on functioning in everyday life, the CIA (Fairburn, 2008; Welch et al., 2011) was used. It has shown good psychometric qualities (Bohn et al., 2008; Jenkins, 2013; Reas, Rø, Kapstad, & Lask, 2010). Alpha in the current study was .93. The CIA consists of 16 items with a 4-point response format from *not at all* to *a lot*. The total score of the CIA ranges from zero to 48 with higher scores reflecting greater negative effects of eating disorders on everyday functioning.

Body Parts Dissatisfaction Scale (BPDS). The BPDS (Corning, Gondoli, Bucchianeri, & Salafia, 2010) assesses bodily discontent by asking the respondents whether there is anything they would like to change about their body, and if so to put a checkmark in front of a list of seven body parts (hips, buttocks, chest, legs, thighs, stomach, and waist), as well as an "other" option and to indicate whether they want it to be unchanged, smaller, or larger, and why. Three subscales can be extracted from this score by simple counts of body parts checked: parts desired to be smaller, parts desired to be larger, and parts with satisfactory size (Corning et al., 2010). Thus, parts desired to be smaller is a simple count of how many body parts were marked to indicate a desire to be thinner. The number of parts participants desired to be smaller has shown positive correlations with other measures of body dissatisfaction and drive for thinness (Corning et al., 2010). This subscale that provides a count score between zero and eight was used in the current study. Higher scores indicate more discontent with the body.

Body Shape Questionnaire-brief version (BSQ). The BSQ (Cooper, Taylor, Cooper, & Fairburn, 1987) is a 32-item self-report questionnaire that measures body dissatisfaction with focus on the specific phenomenology of feeling fat. In the current study, we used a brief, eight-item version of the BSQ that has shown good psychometric qualities (Welch, Lagerström, & Ghaderi, 2012). Items are responded to on a 6-point Likert-like scale from *never* to *always*. The sum score ranges from 8 to 48 with higher scores indicating a stronger sense of body dissatisfaction. The internal consistency of the brief version of the BSQ in the current study was .91.

Ideal Body Stereotype Scale–Revised (IBSS-R). The IBSS-R (Stice, Rohde, et al., 2017) measures pursuit of the thin beauty ideal. Participants are asked to indicate to what extent they agree with six statements about what attractive women look like on a 5-point scale from *strongly disagree* to *strongly agree*. The IBSS-R possesses good psychometric properties (Stice & Agras, 1998). Cronbach's alpha was .87 in the current study. The total sum ranges from 0 to 30 with higher scores indicating a stronger internalization of the thin ideal.

Fidelity: Adherence and Competence

Two undergraduate students from another university with no prior involvement in the study received training to do fidelity ratings according to the Body Project Session Adherence, and Group Leader Competence Assessment (http://www.bodyprojectsupport.org/resources/materials). Adherence ratings were made on a 10-point scale, from 1 = *no adherence* to 10 = *perfect adherence*. Competence rating were also made on a 10-point scale with several anchors (2 = *poor*, 4 = *fair/below average*, 6 = *good/average*, 8 = *excellent/above average*, and 10 = *superior*). Raters were provided with eight training sessions to rate and to compare with the rating of the first author until the raters achieved high agreement with each other (intraclass correlation = .94) and the first author. Both of the students rated 58 sessions. Adherence ratings ranged from 4.7 to 8.9 with a mean of 7.6 (i.e., between good and very good). Competence ratings of the group leaders ranged from 5.6 to 7.2 with a total mean of 6.5 (i.e., slightly above average).

Statistical Analysis

Conditions were compared in terms of incidence of eating disorders over follow-up with Cox' Proportional Hazard Model. The "Log Minus Log" graph, and Cox model with time dependent covariate (i.e., inclusion of time-by-condition interaction) was used to check for the assumption of proportional hazards. Continuous outcome data were analyzed using Generalized Linear Mixed Models (GLMM) using full information maximum likelihood estimation, which allowed the inclusion of participants with at least baseline data, allowing intent-to-treat analyses. Further, fixed and random variables can be specified, and repeated measurements that are nested within the individual, and the most appropriate distribution can be modeled. Outcome data were first investigated using descriptive analyses, to help specify the best distribution and link in the GLMM. The design effect (Pals et al., 2008) was estimated using intraclass correlation and sample size of the groups in the vBP to decide whether subjects should be nested within vBP groups in the analyses. An autoregressive (AR1) covariance type was used for repeated measures. Adding random slope did not improve the fit of the model significantly. To address the inflation of alpha because of multiple comparisons of groups at different time points, we used Sidak correction. Effect sizes are presented as Cohen's *d* with values 0.2, 0.5, and 0.8 as corresponding to small, medium, and large effect sizes. All the analyses were performed in SPSS (IBM Corp, 2017).

Results

There were no statistically or clinically significant differences between the three conditions on any of the demographic or outcome variables at baseline. Participants in both the vBP and the EW reported above the average scores of credibility and expectancy with no significant between-groups differences. All the virtual groups were delivered in real time, and although the participants were given the choice to participate anonymously, no one chose that option.

Incidence of Eating Disorders (Primary Outcome)

The incidence of eating disorders was assessed over 24-month follow up via EDE interviews. Participants in the waitlist condition were offered the vBP intervention after the 6-months follow-up and, thus, they were not assessed for subsequent eating disorders incidence. Thus, analysis of incidence compared the vBP and EW, a credible placebo condition, through 24-month follow-up. Incidence of any eating disorders onset was 3 in vBP (2.0%) and 13 in EW (8.8%), which are significantly different based on Cox's proportional hazard model: $B = -1.34$, $Wald = 4.37$, $p = .037$, Hazard Ratio (Experiment B) = 0.26, 95% confidence interval (CI) [0.075, 0.92]: the incidence of eating disorders in vBP was 77% less than in EW (see Figure 2).

The diagnoses in vBP was 1 BN and 2 BED. In EW, 2 had BN, 5 had BED, 2 had PD, and 2 had subthreshold BN. By design, no participants had a full or subthreshold eating disorders at baseline.

Symptoms and Risk Factors Across Time (Secondary Outcomes)

Because the waitlist control group was offered the vBP intervention after the 6-month follow-up assessment, analyses first examine effects through 6-month follow-up for all three conditions. Then the effects for vBP and EW through 24-months are presented. The means and the standard errors of the EDE and EDDS eating disorder symptom composites, restraint, clinical impairment, and risk factors for the vBP, EW, and the waitlist at baseline, postintervention and the 6-month follow-up are presented in Table 2 along with the overall time, condition, and time-by-condition interaction effects.

As the design effect was negligible because of low number of participants in each vBP group ($n = 3$ to 5), and small intraclass correlations (mostly around .02 or .04), clustering by group was not accounted for in the analytic model. We found significant

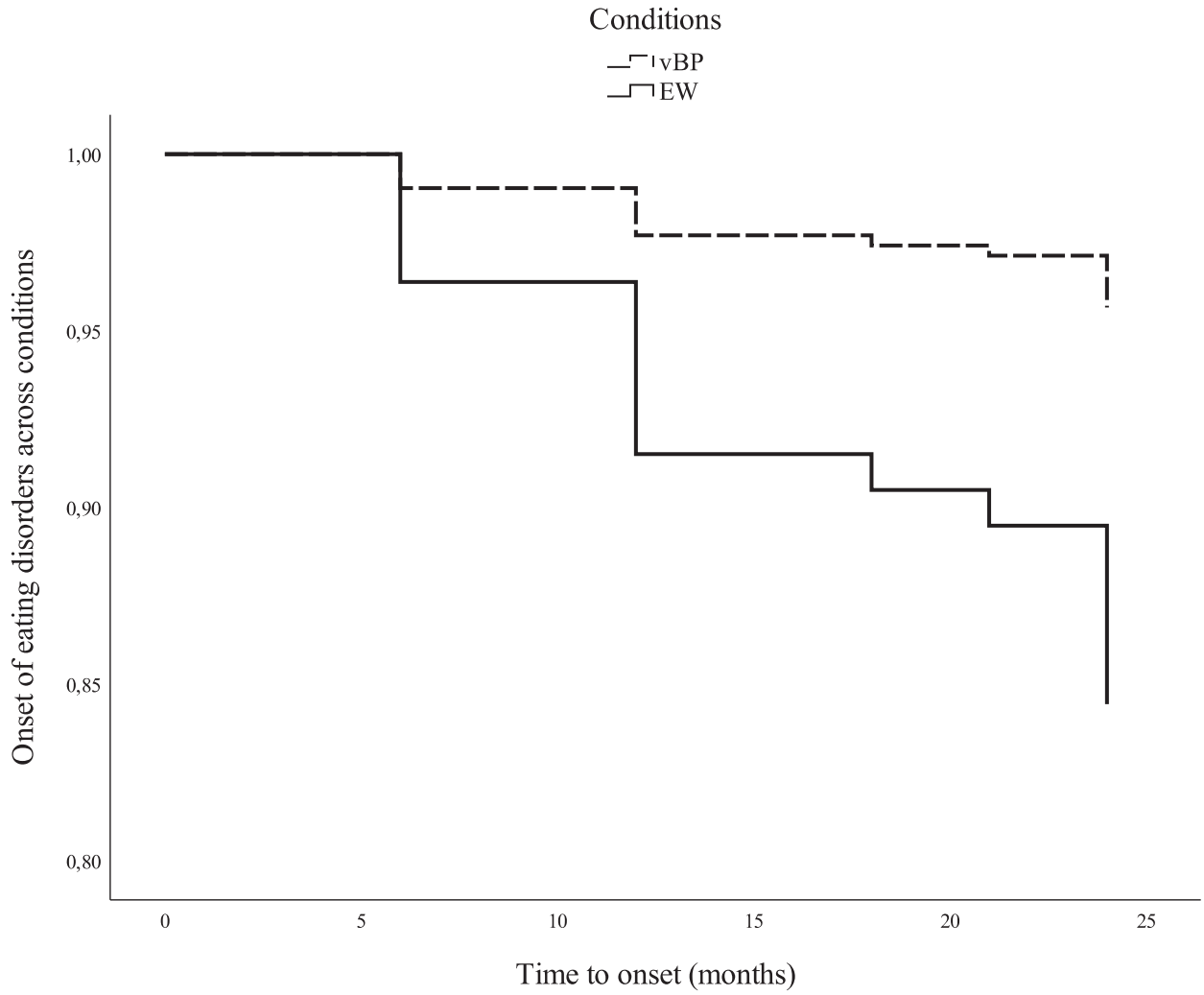

Figure 2. Cumulative survival function of time to incidence of any *Diagnostic and Statistical Manual for Mental Disorders-Fifth Edition* (*DSM–5*) eating disorder diagnosis across the 24-month follow-up in virtually delivered Body Project (vBP) and Expressive Writing (EW).

Table 2

*Mean (M) and the Standard Error (SE) of the Symptoms and Risk Factors for ED for the Virtual Body Project (vBP, N = 149), Expressive Writing (EW, N = 148), and the Waitlist (N = 146) at Baseline, Postintervention, and 6 Months Follow-Up, as Well as Overall Effect of Time, Condition, and Time*Condition Interaction*

Outcome variables	Baseline assessment			Postassessment			6-month follow-up		
	vBP	EW	WL	vBP	EW	WL	vBP	EW	WL
EDDS symptom composite[a]	−0.26 (.05)	−0.17 (.05)	−0.18 (.05)	−0.15 (.05)[a,b]	0.03 (.05)[a]	0.11 (.05)[b]	−0.18 (.05)	0.06 (.06)	0.06 (.06)
Overall time effect: $F(2, 1023) = 33.54$, $p < .001$, Condition: $F(2, 1023) = 4.99$, $p = .007$, Time × Condition = $F(4, 1023) = 1.89$, $p = .11$									
EDE symptom composite[b]	−0.96 (.96)	−0.57 (.97)	1.56 (.97)				−4.50 (1.28)[a,b]	1.43 (1.31)[a]	3.82 (1.25)[b]
Overall time effect: $F(1, 672) = .10$, $p = .76$, Condition: $F(2, 672) = 9.05$, $p < .001$, Time × Condition = $F(2, 672) = 5.80$, $p = .003$									
Restraint[c]	1.57 (.11)	1.73 (.11)	1.80 (.11)	0.85 (.12)[a,b]	1.32 (.12)[a]	1.59 (.12)[b]	0.95 (.13)	1.40 (.13)	1.48 (.12)
Overall time effect: $F(2, 1025) = 29.35$, $p < .001$, Condition: $F(2, 1025) = 7.11$, $p < .001$, Time × Condition = $F(4, 1025) = 3.50$, $p = .016$									
Clinical impairment[d]	13.22 (.70)	14.48 (.70)	15.38 (.71)	9.08 (.80)[a]	11.74 (.81)[a]	14.85 (.77)[a]	10.00 (.82)[a]	11.50 (.84)	12.95 (.80)[a]
Overall time effect: $F(2, 1025) = 25.97$, $p < .001$, Condition: $F(2, 1025) = 8.05$, $p < .001$, Time × Condition = $F(4, 1025) = 3.93$, $p = .004$									
Body parts dissatisfaction[e]	4.47 (.16)	4.60 (.16)	4.64 (.16)	2.62 (.18)[a]	3.62 (.18)[a]	4.26 (.17)[a]	2.85 (.19)[a,b]	3.51 (.19)[a]	3.84 (.18)[b]
Overall time effect: $F(2, 1029) = 84.92$, $p < .001$, Condition: $F(2, 1029) = 10.84$, $p < .001$, Time × Condition = $F(4, 1025) = 3.79$, $p = .005$									
Negative affect[f]	25.29 (.59)	24.84 (.60)	25.89 (.60)	22.31 (.70)[a,b]	24.29 (.71)[a]	25.74 (.67)[b]	23.69 (.72)	25.11 (.73)	24.11 (.70)
Overall time effect: $F(2, 1025) = 4.83$, $p = .003$, Condition: $F(2, 1025) = 2.13$, $p = .12$, Time × Condition = $F(4, 1025) = 3.50$, $p = .016$									
Body shape dissatisfaction[g]	26.37 (.71)	27.77 (.71)	27.07 (.71)	20.33 (.80)[a,b]	24.20 (.80)[a]	26.08 (.77)[b]	21.43 (.82)[a,b]	24.45 (.83)[a]	24.57 (.79)[b]
Overall time effect: $F(2, 1028) = 52.78$, $p < .001$, Condition: $F(2, 1028) = 6.99$, $p < .001$, Time × Condition = $F(4, 1028) = 7.52$, $p < .001$									
Internalization of thin ideal[h]	21.05 (.33)	21.41 (.33)	21.25 (.34)	17.67 (.38)[a,b]	20.92 (.38)[a]	21.50 (.36)[b]	18.55 (.39)[a,b]	20.84 (.40)[a]	21.28 (.38)[b]
Overall time effect: $F(2, 1037) = 19.10$, $p < .001$, Condition: $F(2, 1037) = 16.83$, $p < .001$, Time × Condition = $F(4, 1037) = 15.31$, $p < .001$									

Note. Conditions with the same superscripts [a] or [b] are significantly different at the respective time point based on Sidak Post hoc test.
[a] Eatign disorder (ED) symptoms measured by the mean standardized score of the Eating Disorders Diagnostic Scale (EDDS). [b] A symptom composite based on the EDE interview. [c] The Restraint subscale of the Eating Disorder Questionnaire (EDE-Q). [d] Clinical impairment because of ED symptoms measured by the Clinical Impairment Assessment (CIA). [e] Dissatisfaction subscale of the Body Parts Dissatisfaction Scale (BPDS). [f] Negative affect, based on the Positive and Negative Affect Schedule (Negative affect). [g] The body shape dissatisfaction based on the Body Shape Questionnaire (BSQ). [h] The internalization of the thin ideal according to the Ideal-Body-Stereotype Scale (IBSS).

Table 3

*Mean (M) and the Standard Error (SE) of the Symptoms and Risk Factors for ED for the Virtual Body Project (vBP, N = 149) and Expressive Writing (EW, N = 148) at Each Assessment Point, as Well as Overall Effect of Time, Condition, and Time*Condition Interaction*

	Baseline		Postassessment		6 month follow-up		12 months follow-up		18 months follow-up		24 months follow-up	
Outcome variables	vBP	EW	vBP	EW	vBP	EW	vBP	EW	vBP	EW	vBP	EW
EDDS symptom composite[a]	−0.26 (.05)	−0.17 (.05)	−0.15 (.05)[a]	0.04 (.05)[a]	−0.11 (.06)[a]	0.06 (.06)[a]	−0.04 (.06)	0.10 (.06)	−0.09 (.06)	0.08 (.06)	−0.09 (.06)	0.5 (.06)
Overall time effect: $F(5, 1141) = 8.15$, $p < .001$, Condition: $F(1, 1141) = 6.75$, $p = .009$, Time × Condition = $F(5, 1141) = 0.46$, $p = .81$												
EDE symptom composite[b]	6.21 (.33)	6.03 (.34)			3.04 (.43)[a]	5.75 (.44)[a]	3.98 (.48)	4.18 (.48)			3.97 (.45)[a]	5.92 (.43)[a]
Overall time effect: $F(3, 723) = 0.88$, $p = .45$, Condition: $F(1, 723) = 0.10$, $p = .002$, Time × Condition = $F(3, 723) = 3.54$, $p = .015$												
Restraint[c]	1.57 (.11)	1.73 (.11)	0.85 (.12)[a]	1.32 (.12)[a]	.95 (.12)[a]	1.39 (.13)[a]	1.17 (.13)	1.51 (.13)	0.93 (.14)[a]	1.32 (.13)[a]	0.92 (.14)[a]	1.35 (.13)[a]
Overall time effect: $F(5, 1142) = 14.60$, $p < .001$, Condition: $F(5, 1142) = 8.00$, $p = .005$, Time × Condition = $F(5, 1142) = 0.95$, $p = .45$												
Clinical impairment[d]	13.22 (.72)	14.48 (.73)	9.09 (.82)[a]	11.76 (.83)[a]	9.97 (.84)	11.47 (.86)	10.65 (.91)	10.87 (.87)	8.51 (.94)	9.76 (.87)	9.08 (.93)	10.12 (.90)
Overall time effect: $F(5, 1142) = 15.96$, $p < .001$, Condition: $F(5, 1142) = 2.13$, $p = .15$, Time × Condition = $F(5, 1142) = 0.84$, $p = .52$												
Body parts dissatisfaction[e]	4.47 (.17)	4.60 (.17)	2.63 (.19)[a]	3.64 (.19)[a]	2.86 (.19)[a]	3.51 (.20)[a]	2.67 (.21)	3.11 (.20)	2.60 (.21)	3.00 (.20)	2.80 (.21)	2.96 (.21)
Overall time effect: $F(5, 1145) = 48.32$, $p < .001$, Condition: $F(5, 1145) = 5.09$, $p = .024$, Time × Condition = $F(5, 1145) = 3.01$, $p = .011$												
Negative affect[f]	25.29 (.61)	24.84 (.61)	22.35 (.72)	24.31 (.73)	23.72 (.73)	25.17 (.75)	25.47 (.80)	24.92 (.76)	22.69 (.82)	23.67 (.75)	23.37 (.81)	22.47 (.78)
Overall time effect: $F(5, 1142) = 5.92$, $p < .001$, Condition: $F(5, 1142) = 0.33$, $p = .56$, Time × Condition = $F(5, 1142) = 2.20$, $p = .052$												
Body shape dissatisfaction[g]	26.37 (.73)	27.77 (.73)	20.38 (.82)[a]	24.22 (.82)[a]	21.47 (.84)[a]	24.45 (.85)[a]	21.46 (.90)	23.21 (.87)	20.03 (.93)[a]	23.06 (.87)[a]	20.24 (.93)[a]	23.14 (.90)[a]
Overall time effect: $F(5, 1145) = 28.32$, $p < .001$, Condition: $F(5, 1145) = 8.17$, $p = .004$, Time × Condition = $F(5, 1145) = 1.61$ $p = .16$												
Internalization of thin ideal[h]	21.04 (.36)	21.41 (.36)	17.69 (.41)[a]	20.94 (.41)[a]	18.59 (.42)[a]	20.78 (.43)[a]	18.63 (.46)[a]	20.10 (.44)[a]	17.81 (.48)[a]	20.44 (.44)[a]	18.76 (.48)[a]	20.26 (.46)[a]
Overall time effect: $F(5, 1149) = 13.70$ $p < .001$, Condition: $F(5, 1149) = 19.58$ $p < .001$, Time × Condition = $F(5, 1149) = 7.12$ $p < .001$												

Note. Conditions with the same superscripts [a] are significantly different at the respective time point based on Sidak Post hoc test.
[a] Eating disorder (ED) symptoms measured by the mean standardized score of the Eating Disorders Diagnostic Scale (EDDS). [b] A symptom composite based on the EDE interview. [c] The Restraint subscale of the Eating Disorder Questionnaire (EDE-Q). [d] Clinical impairment because of ED symptoms measured by the Clinical Impairment Assessment (CIA). [e] Dissatisfaction subscale of the Body Parts Dissatisfaction Scale (BPDS). [f] Negative affect, based on the Positive and Negative Affect Schedule (Negative affect). [g] The body shape dissatisfaction based on the Body Shape Questionnaire (BSQ). [h] The internalization of the thin ideal according to the Ideal-Body-Stereotype Scale (IBSS).

interaction effects for all the outcomes with the exception of the self-reported EDDS symptom composite. The groups started on an equal basis after the randomization, and as expected, participants in the vBP reported significantly larger reductions in all risk factors and clinical impairment (CIA). The EW produced significantly better outcome than the waitlist on body dissatisfaction and functional impairment caused by eating pathology after the end of the intervention. At the 6-months follow-up the EW and waitlist did not differ significantly from each other, but both produced less favorable outcomes than the vBP. The magnitude of effects, where the conditions were significantly different from each other based on the Sidak post hoc analysis, varied between Cohen's *d* of 0.27 and 0.69 from baseline to the end of the interventions for comparisons between the vBP and the EW. For comparisons between the vBP and the waitlist, the effects varied between Cohen's *d* of 0.51 and 0.84. Corresponding effect sizes at the 6-month follow-up were between 0.29 and 0.47, and between 0.30 and 0.58, respectively.

In terms of long-term outcomes where the vBP and the EW were compared, a significant time effect was noted for all the symptoms and risk factors, but only three significant time-by-condition interactions emerged (Table 3). Participants in the vBP reported significantly lower scores on the EDE symptom composite, internalization of the thin ideal, and body dissatisfaction across time compared with EW controls. Results were also rerun for completers only. The results were very similar to those of the ITT analysis, and are not presented.

Change in the internalization of the thin ideal in the vBP and EW across all the assessment points are illustrated in Figure 3, where the Sidak post hoc analysis indicated several instances where these two conditions were statistically different from each other. The effect sizes (Cohen's *d*) of the differences between the vBP and the EW at various time points varied between 0.26 and 0.65. Changes on the body parts dissatisfaction scale and the EDE composite scale are illustrated in Figure 4 and 5, respectively.

Discussion

With regard to the primary outcome, the incidence of eating disorders over 2-year follow-up was a statistically significant 77% lower in the vBP than the EW condition. The reduction in future eating disorders onset was slightly larger than the 60% reduction in future eating disorders onset over a 3-year follow-up compared with assessment-only controls (Stice, Marti, et al., 2008), though in this earlier trial the incidence of eating disorders onset was not significantly lower than the EW comparison condition, making the present results noteworthy. The Body Project is one of only two eating disorder prevention programs that have significantly reduced future onset of eating disorders over multiyear follow-up (Stice et al., 2019), and the present reduction in eating disorder incidence is even more noteworthy given that BP groups were implemented virtually, rather than in-person, and the incidence was significantly lower than observed in a credible alternative intervention for the first time. The Body Project has only reduced future onset of eating disorders when implemented by peer educators as in the current trial, or coimplemented by peer educators (Stice, Marti, et al., 2008). It has not reduced future onset of eating disorders when implemented by clinicians (Stice, Rohde, Butryn, Shaw, & Marti, 2015; Stice, Rohde, Shaw, & Gau, 2011). Other potentially important factors that might explain more pronounced effects in the current trial compared with previous trails might be the booster contact with the participants at the 12-month follow-up, the lack of participant payments for completing assessment (that might have resulted in the recruitment of participants more

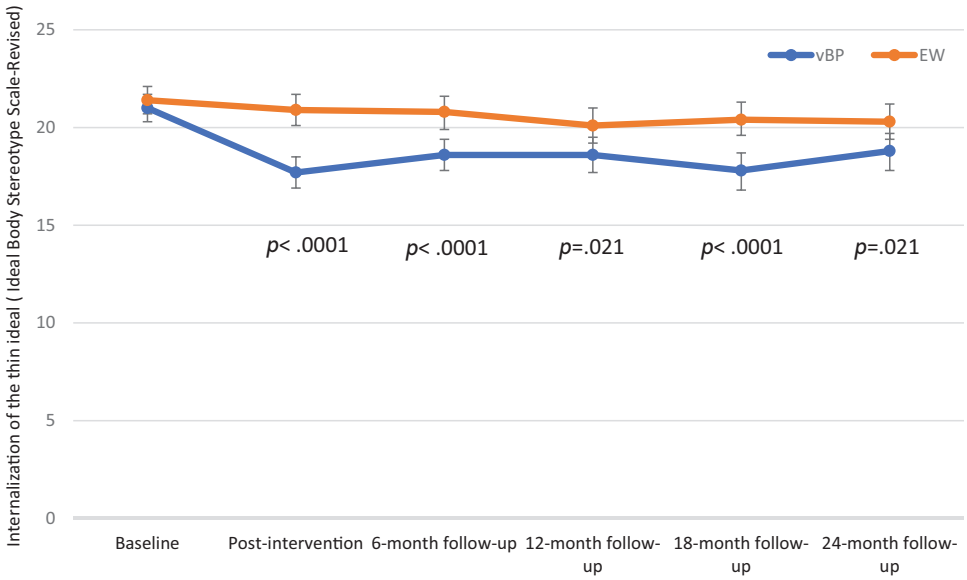

Figure 3. Means and the corresponding 95% confidence intervals for the internalization of the thin ideal across time (from baseline to the end of intervention, and 6, 12, 18, and 24 months follow-up) in the virtually delivered Body Project (vBP) and expressive writing (EW). Significant differences between the groups at each time point are based on Sidak post hoc analysis. See the online article for the color version of this figure.

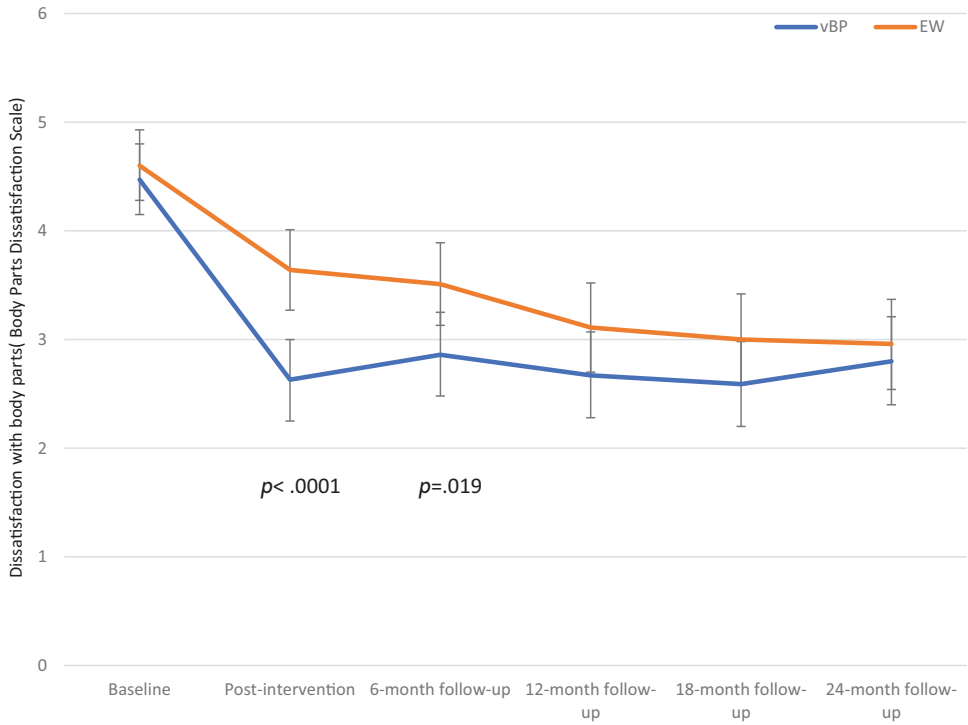

Figure 4. Means and the corresponding 95% confidence intervals for the body parts dissatisfaction scale (from baseline to the end of intervention, and 6, 12, 18, and 24 months follow-up) in the virtually delivered Body Project (vBP) and expressive writing (EW). Significant differences between the groups at each time point are based on Sidak post-hoc analysis. See the online article for the color version of this figure.

authentically motivated to address their body image concerns), virtual nature of the delivery of the intervention with increased flexibility to schedule meetings, and a more relaxed and accepting environment because of balance between proximity and distance in a virtual meeting compared with face-to-face meetings (the latter is based on qualitative feedback from participants).

Baseline measures indicate that the participants were in fact an at-risk-group based on their level of thin-ideal internalization, negative affect, and somewhat higher body dissatisfaction than in some previous trials (e.g., Stice, Rohde, et al., 2017), consistent with the interpretation that the recruitment methods attracted participants with greater body dissatisfaction. With regard to short-term results, we found significant differences between the conditions at postintervention assessment and 6-month follow-up on virtually all the secondary outcome variables, favoring the vBP (see Table 2). In line with previous research (e.g., Stice et al., 2006), those in the EW condition reported better outcome than those in the waitlist condition on some of the outcomes at the end of the intervention, which further confirms the credibility of the EW compared with waitlist. Participants in the EW were asked to write about any thoughts, emotions, memories, or images related to their body, which is different from previous trials of Body Project where the instruction has been to write about any emotionally significant topics. Not surprisingly, the interview data showed greater sensitivity compared with questionnaire data, as the differences between the conditions in terms of continuous symptom composite were significant based on the EDE interview symptom composite, but not the self-reported symptoms (EDDS). Self-report of some symptoms such as binge eating suffers from low reliability and validity (Luce & Crowther, 1999; Wilfley, Schwartz, Spurrell, & Fairburn, 2000), which limits sensitivity. With regard to the long-term follow-up of eating disorder symptoms, although the changes within the vBP across time were larger than in EW, the differences failed to reach statistical significance on self-reported data, while the differences based on interview data showed a significant time-by-condition interaction. The most important risk factors that are targeted in the vBP (i.e., internalization of the thin ideal, and body dissatisfaction) decreased significantly more in the vBP than the EW across time (i.e., significant group-by-time interactions). This is also in line with previous trials where the formal investigation of the mediators of outcome in the Body Project has confirmed the mechanistic hypothesis that the intervention reduces eating disorder symptoms by reducing pursuit of the thin beauty ideal (Stice et al., 2007) and reward region response to the thin beauty ideal (Stice et al., 2015). The total picture based on primary and secondary outcomes confirms the efficacy of the vBP and converges with findings from previous trials of the Body Project with similar effect sizes in terms of between condition differences at long-term follow-ups (Stice, Marti, et al., 2008; Stice, Rohde, et al., 2017).

At postintervention, the EW produced better outcome than the waitlist control group with regards to body dissatisfaction and clinical impairment caused by eating disorders-related symptoms, but the differences between the EW and the waitlist control group both at postintervention and 6-month follow-up were generally small and consistently nonsignificant, while the vBP produced

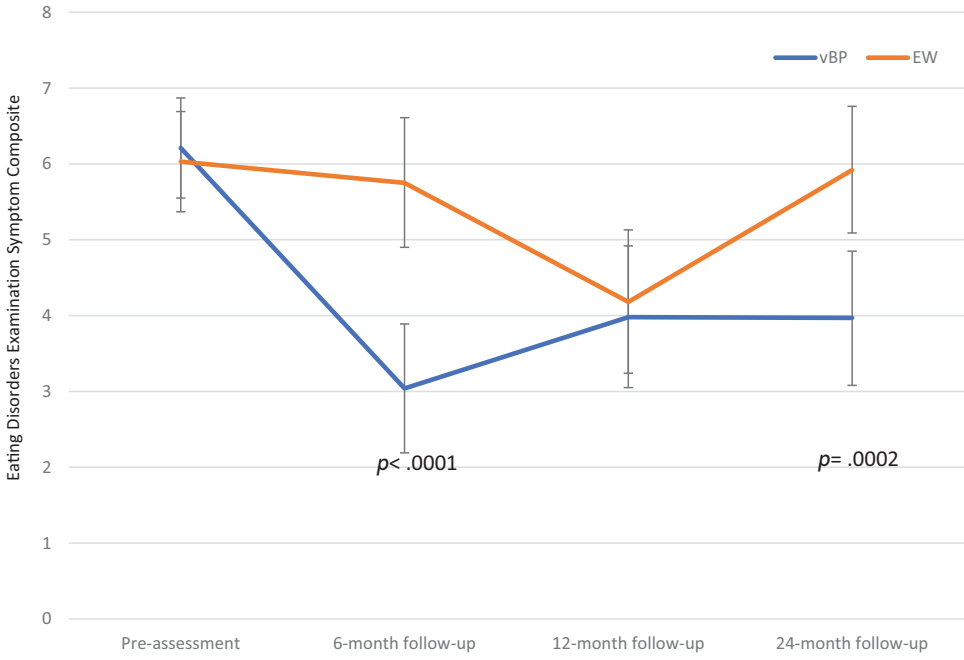

Figure 5. Means and the corresponding 95% confidence intervals for the EDE symptom composite (from baseline to 6, 12, and 24 months follow-up) in the virtually delivered Body Project (vBP) and expressive writing (EW). Significant differences between the groups at each time point are based on Sidak post hoc analysis. See the online article for the color version of this figure.

significantly larger reductions than both the placebo and the wait-list condition on almost all outcomes (see Table 2).

To summarize, the outcomes were generally in line with the study hypotheses. The virtual groups provided a flexible context for participants to meet and engage in group discussions. The recordings of the sessions made it possible for those who missed a session to go through the content ahead of the upcoming session, which adds to the flexibility and improved compliance in this format of delivery. It is plausible to assume that the virtual nature of the group format was a good fit for the participants given their age and skills in using digital or social media. The content in the vBP was basically identical to what has been delivered in previous and recently completed Body Project trials (Stice, Marti, et al., 2008; Stice, Rohde, et al., 2015; Stice, Rohde, et al., 2017). The study was performed in Sweden. The intervention script for the Body Project has been translated from English into German, Italian, French, Spanish, Portuguese, Chinese, and Japanese, in addition to the Swedish translations evaluated herein, and they are all freely available for use by anyone.

Drop-out was significant, and a marked limitation of the study, by decreasing the internal validity and power of the study. Detailed dropout analysis (for the entire sample, and on each condition separately) did not reveal any statistically or clinically meaningful differences between the drop-out group and the completers. As there was no evidence that dropout was systematic (i.e., it was noninformative with regard to hazard for the outcome), and assuming that the Cox proportional hazard model accounts for noninformative censoring under such conditions, which includes right censored data (Willett & Singer, 1993, p. 954), we believe that the estimate of the hazard function is reasonable. Another limitation was that the EW intervention was not group-based to match the format of the vBP. However, face-to-face delivered Body Project groups have produced significantly greater reductions in eating disorder risk factors and symptoms than alternative group-based interventions matched to the duration of the Body Project (e.g., Becker et al., 2010; Stice et al., 2006).

In conclusion, the vBP showed promising outcome in terms of significantly lower incidence of eating disorders across a 2-year follow-up period, and significantly reduced targeted risk factors compared with a credible placebo. An important direction for future research would be to test whether virtual implementation of the Body Project improves the reach of this prevention program.

References

Aardoom, J. J., Dingemans, A. E., Spinhoven, P., & Van Furth, E. F. (2013). Treating eating disorders over the internet: A systematic review and future research directions. *International Journal of Eating Disorders, 46,* 539–552. http://dx.doi.org/10.1002/eat.22135

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Arcelus, J., Mitchell, A. J., Wales, J., & Nielsen, S. (2011). Mortality rates in patients with anorexia nervosa and other eating disorders. A meta-analysis of 36 studies. *Archives of General Psychiatry, 68,* 724–731. http://dx.doi.org/10.1001/archgenpsychiatry.2011.74

Austin, S. B., Field, A. E., Wiecha, J., Peterson, K. E., & Gortmaker, S. L. (2005). The impact of a school-based obesity prevention trial on disordered weight-control behaviors in early adolescent girls. *Archives of Pediatrics & Adolescent Medicine, 159,* 225–230. http://dx.doi.org/10.1001/archpedi.159.3.225

Bakke, B., Mitchell, J., Wonderlich, S., & Erickson, R. (2001). Administering cognitive-behavioral therapy for bulimia nervosa via telemedicine in rural settings. *International Journal of Eating Disorders, 30,* 454–457. http://dx.doi.org/10.1002/eat.1107

Bardone-Cone, A. M., & Boyd, C. A. (2007). Psychometric properties of eating disorder instruments in Black and White young women: Internal consistency, temporal stability, and validity. *Psychological Assessment, 19,* 356–362. http://dx.doi.org/10.1037/1040-3590.19.3.356

Becker, C. B., Smith, L., & Ciao, A. C. (2005). Reducing eating disorder risk factors in sorority members: A randomized trial. *Behavior Therapy, 36,* 245–253. http://dx.doi.org/10.1016/S0005-7894(05)80073-5

Becker, C. B., Wilson, C., Williams, A., Kelly, M., McDaniel, L., & Elmquist, J. (2010). Peer-facilitated cognitive dissonance versus healthy weight eating disorders prevention: A randomized comparison. *Body Image, 7,* 280–288. http://dx.doi.org/10.1016/j.bodyim.2010.06.004

Bohn, K., Doll, H. A., Cooper, Z., O'Connor, M., Palmer, R. L., & Fairbum, C. G. (2008). The measurement of impairment due to eating disorder psychopathology. *Behaviour Research and Therapy, 46,* 1105–1110. http://dx.doi.org/10.1016/j.brat.2008.06.012

Cooper, P. J., Taylor, M. J., Cooper, Z., & Fairburn, C. G. (1987). The development and validation of the Body Shape Questionnaire. *International Journal of Eating Disorders, 6,* 485–494. http://dx.doi.org/10.1002/1098-108X(198707)6:4<485::AID-EAT2260060405>3.0.CO;2-O

Corning, A. F., Gondoli, D. M., Bucchianeri, M. M., & Salafia, E. H. (2010). Preventing the development of body issues in adolescent girls through intervention with their mothers. *Body Image, 7,* 289–295. http://dx.doi.org/10.1016/j.bodyim.2010.08.001

Devilly, G. J., & Borkovec, T. D. (2000). Psychometric properties of the credibility/expectancy questionnaire. *Journal of Behavior Therapy and Experimental Psychiatry, 31,* 73–86. http://dx.doi.org/10.1016/S0005-7916(00)00012-4

Ekeland, A. G., Bowes, A., & Flottorp, S. (2010). Effectiveness of telemedicine: A systematic review of reviews. *International Journal of Medical Informatics, 79,* 736–771. http://dx.doi.org/10.1016/j.ijmedinf.2010.08.006

Fairburn, C. G. (2008). *Cognitive behavior therapy and eating disorders*. New York, NY: Guilford Press.

Ghaderi, A., & Scott, B. (2001). Prevalence, incidence and prospective risk factors for eating disorders. *Acta Psychiatrica Scandinavica, 104,* 122–130. http://dx.doi.org/10.1034/j.1600-0447.2001.00298.x

Green, M., Scott, N., Diyankova, I., & Gasser, C. (2005). Eating disorder prevention: An experimental comparison of high level dissonance, low level dissonance, and no-treatment control. *Eating Disorders, 13,* 157–169. http://dx.doi.org/10.1080/10640260590918955

Guest, T. (2000). Using the eating disorder examination in the assessment of bulimia and anorexia: Issues of reliability and validity. *Social Work in Health Care, 31,* 71–83. http://dx.doi.org/10.1300/J010v31n04_05

Halliwell, E., & Diedrichs, P. C. (2014). Testing a dissonance body image intervention among young girls. *Health Psychology, 33,* 201–204. http://dx.doi.org/10.1037/a0032585

Hay, P. (2013). A systematic review of evidence for psychological treatments in eating disorders: 2005–2012. *International Journal of Eating Disorders, 46,* 462–469. http://dx.doi.org/10.1002/eat.22103

Hilty, D. M., Sunderji, N., Suo, S., Chan, S., & McCarron, R. M. (2018). Telepsychiatry and other technologies for integrated care: Evidence base, best practice models and competencies. *International Review of Psychiatry, 30,* 292–309. http://dx.doi.org/10.1080/09540261.2019.1571483

Holmes, E. A., Ghaderi, A., Harmer, C. J., Ramchandani, P. G., Cuijpers, P., Morrison, A. P., . . . Craske, M. G. (2018). The Lancet Psychiatry Commission on psychological treatments research in tomorrow's science. *The Lancet Psychiatry, 5,* 237–286. http://dx.doi.org/10.1016/S2215-0366(17)30513-8

IBM Corp. (2017). *IBM SPSS Statistics for Macintosh* (Version 25). Armonk, NY: Author.

Jacobi, C., Fittig, E., Bryson, S. W., Wilfley, D., Kraemer, H. C., & Taylor, C. B. (2011). Who is really at risk? Identifying risk factors for subthreshold and full syndrome eating disorders in a high-risk sample. *Psychological Medicine, 41,* 1939–1949. http://dx.doi.org/10.1017/S0033291710002631

Jenkins, P. E. (2013). Psychometric validation of the Clinical Impairment Assessment in a U. K. eating disorder service. *Eating Behaviors, 14,* 241–243. http://dx.doi.org/10.1016/j.eatbeh.2012.12.001

Kazdin, A. E. (2014). Evidence-based psychotherapies I: Qualifiers and limitations in what we know. *South African Journal of Psychology, 44,* 381–403. http://dx.doi.org/10.1177/0081246314533750

Klump, K. L., Bulik, C. M., Kaye, W. H., Treasure, J., & Tyson, E. (2009). Academy for eating disorders position paper: Eating disorders are serious mental illnesses. *International Journal of Eating Disorders, 42,* 97–103. http://dx.doi.org/10.1002/eat.20589

Le, L. K., Barendregt, J. J., Hay, P., & Mihalopoulos, C. (2017). Prevention of eating disorders: A systematic review and meta-analysis. *Clinical Psychology Review, 53,* 46–58. http://dx.doi.org/10.1016/j.cpr.2017.02.001

Lewinsohn, P. M., Striegel-Moore, R. H., & Seeley, J. R. (2000). Epidemiology and natural course of eating disorders in young women from adolescence to young adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry, 39,* 1284–1292. http://dx.doi.org/10.1097/00004583-200010000-00016

Luce, K.-H., & Crowther, J.-H. (1999). The reliability of the Eating Disorder Examination-Self-Report Questionnaire Version (EDE-Q). *International Journal of Eating Disorders, 25,* 349–351. http://dx.doi.org/10.1002/(SICI)1098-108X(199904)25:3<349::AID-EAT15>3.0.CO;2-M

The McKnight Investigators. (2003). Risk factors for the onset of eating disorders in adolescent girls: Results of the McKnight longitudinal risk factor study. *The American Journal of Psychiatry, 160,* 248–254. http://dx.doi.org/10.1176/ajp.160.2.248

McMillan, W., Stice, E., & Rohde, P. (2011). High- and low-level dissonance-based eating disorder prevention programs with young women with body image concerns: An experimental trial. *Journal of Consulting and Clinical Psychology, 79,* 129–134. http://dx.doi.org/10.1037/a0022143

Mitchell, J. E., Crosby, R. D., Wonderlich, S. A., Crow, S., Lancaster, K., Simonich, H., . . . Myers, T. C. (2008). A randomized trial comparing the efficacy of cognitive-behavioral therapy for bulimia nervosa delivered via telemedicine versus face-to-face. *Behaviour Research and Therapy, 46,* 581–592. http://dx.doi.org/10.1016/j.brat.2008.02.004

Neumark-Sztainer, D., Butler, R., & Palti, H. (1995). Eating disturbances among adolescent girls: Evaluation of a school-based primary prevention program. *Journal of Nutrition Education, 27,* 24–31. http://dx.doi.org/10.1016/S0022-3182(12)80262-7

Pals, S. L., Murray, D. M., Alfano, C. M., Shadish, W. R., Hannan, P. J., & Baker, W. L. (2008). Individually randomized group treatment trials: A critical appraisal of frequently used design and analytic approaches. *American Journal of Public Health, 98,* 1418–1424. http://dx.doi.org/10.2105/AJPH.2007.127027

Peterson, C. B., Crosby, R. D., Wonderlich, S. A., Joiner, T., Crow, S. J., Mitchell, J. E., . . . le Grange, D. (2007). Psychometric properties of the eating disorder examination-questionnaire: Factor structure and internal consistency. *International Journal of Eating Disorders, 40,* 386–389. http://dx.doi.org/10.1002/eat.20373

Reas, D. L., Rø, O., Kapstad, H., & Lask, B. (2010). Psychometric properties of the clinical impairment assessment: Norms for young adult women. *International Journal of Eating Disorders, 43,* 72–76.

Rohde, P., Stice, E., & Marti, C. N. (2015). Development and predictive effects of eating disorder risk factors during adolescence: Implications

for prevention efforts. *International Journal of Eating Disorders, 48,* 187–198. http://dx.doi.org/10.1002/eat.22270

Rosen, J. C., Vara, L., Wendt, S., & Leitenberg, H. (1990). Validity studies of the Eating Disorders Examination. *International Journal of Eating Disorders, 9,* 519–528. http://dx.doi.org/10.1002/1098-108X(199009)9:5<519::AID-EAT2260090507>3.0.CO;2-K

Seidel, A., Presnell, K., & Rosenfield, D. (2009). Mediators in the dissonance eating disorder prevention program. *Behaviour Research and Therapy, 47,* 645–653. http://dx.doi.org/10.1016/j.brat.2009.04.007

Simpson, S., Knox, J., Mitchell, D., Ferguson, J., Brebner, J., & Brebner, E. (2003). A multidisciplinary approach to the treatment of eating disorders via videoconferencing in north-east Scotland. *Journal of Telemedicine and Telecare, 9*(Suppl. 1), S37–S38. http://dx.doi.org/10.1258/135763303322196286

Stice, E., & Agras, W. S. (1998). Predicting onset and cessation of bulimic behaviors during adolescence: A longitudinal grouping analysis. *Behavior Therapy, 29,* 257–276. http://dx.doi.org/10.1016/S0005-7894(98)80006-3

Stice, E., Fisher, M., & Martinez, E. (2004). Eating disorder diagnostic scale: Additional evidence of reliability and validity. *Psychological Assessment, 16,* 60–71. http://dx.doi.org/10.1037/1040-3590.16.1.60

Stice, E., Gau, J. M., Rohde, P., & Shaw, H. (2017). Risk factors that predict future onset of each *DSM–5* eating disorder: Predictive specificity in high-risk adolescent females. *Journal of Abnormal Psychology, 126,* 38–51. http://dx.doi.org/10.1037/abn0000219

Stice, E., Marti, C. N., & Rohde, P. (2013). Prevalence, incidence, impairment, and course of the proposed *DSM–5* eating disorder diagnoses in an 8-year prospective community study of young women. *Journal of Abnormal Psychology, 122,* 445–457. http://dx.doi.org/10.1037/a0030679

Stice, E., Marti, C. N., Shaw, H., & Rohde, P. (2019). Meta-analytic review of dissonance-based eating disorder prevention programs: Intervention, participant, and facilitator features that predict larger effects. *Clinical Psychology Review, 70,* 91–107. http://dx.doi.org/10.1016/j.cpr.2019.04.004

Stice, E., Marti, C. N., Spoor, S., Presnell, K., & Shaw, H. (2008). Dissonance and healthy weight eating disorder prevention programs: Long-term effects from a randomized efficacy trial. *Journal of Consulting and Clinical Psychology, 76,* 329–340. http://dx.doi.org/10.1037/0022-006X.76.2.329

Stice, E., Presnell, K., Gau, J., & Shaw, H. (2007). Testing mediators of intervention effects in randomized controlled trials: An evaluation of two eating disorder prevention programs. *Journal of Consulting and Clinical Psychology, 75,* 20–32. http://dx.doi.org/10.1037/0022-006X.75.1.20

Stice, E., Rohde, P., Butryn, M. L., Shaw, H., & Marti, C. N. (2015). Effectiveness trial of a selective dissonance-based eating disorder prevention program with female college students: Effects at 2- and 3-year follow-up. *Behaviour Research and Therapy, 71,* 20–26. http://dx.doi.org/10.1016/j.brat.2015.05.012

Stice, E., Rohde, P., Durant, S., & Shaw, H. (2012). A preliminary trial of a prototype Internet dissonance-based eating disorder prevention program for young women with body image concerns. *Journal of Consulting and Clinical Psychology, 80,* 907–916. http://dx.doi.org/10.1037/a0028016

Stice, E., Rohde, P., Shaw, H., & Gau, J. (2011). An effectiveness trial of a selected dissonance-based eating disorder prevention program for female high school students: Long-term effects. *Journal of Consulting and Clinical Psychology, 79,* 500–508. http://dx.doi.org/10.1037/a0024351

Stice, E., Rohde, P., Shaw, H., & Gau, J. M. (2017). Clinician-led, peer-led, and internet-delivered dissonance-based eating disorder prevention programs: Acute effectiveness of these delivery modalities. *Journal of Consulting and Clinical Psychology, 85,* 883–895. http://dx.doi.org/10.1037/ccp0000211

Stice, E., Shaw, H., Becker, C. B., & Rohde, P. (2008). Dissonance-based Interventions for the prevention of eating disorders: Using persuasion principles to promote health. *Prevention Science, 9,* 114–128. http://dx.doi.org/10.1007/s11121-008-0093-x

Stice, E., Shaw, H., Burton, E., & Wade, E. (2006). Dissonance and healthy weight eating disorder prevention programs: A randomized efficacy trial. *Journal of Consulting and Clinical Psychology, 74,* 263–275. http://dx.doi.org/10.1037/0022-006X.74.2.263

Stice, E., Telch, C. F., & Rizvi, S. L. (2000). Development and validation of the Eating Disorder Diagnostic Scale: A brief self-report measure of anorexia, bulimia, and binge-eating disorder. *Psychological Assessment, 12,* 123–131. http://dx.doi.org/10.1037/1040-3590.12.2.123

Stice, E., Yokum, S., & Waters, A. (2015). Dissonance-based eating disorder prevention program reduces reward region response to thin models: How actions shape valuation. *PLoS ONE, 10,* e0144530. http://dx.doi.org/10.1371/journal.pone.0144530

Swanson, S. A., Crow, S. J., Le Grange, D., Swendsen, J., & Merikangas, K. R. (2011). Prevalence and correlates of eating disorders in adolescents. Results from the national comorbidity survey replication adolescent supplement. *Archives of General Psychiatry, 68,* 714–723. http://dx.doi.org/10.1001/archgenpsychiatry.2011.22

Taylor, C. B., Bryson, S., Luce, K. H., Cunning, D., Doyle, A. C., Abascal, L. B., . . . Wilfley, D. E. (2006). Prevention of eating disorders in at-risk college-age women. *Archives of General Psychiatry, 63,* 881–888. http://dx.doi.org/10.1001/archpsyc.63.8.881

Vlaescu, G., Alasjö, A., Miloff, A., Carlbring, P., & Andersson, G. (2016). Features and functionality of the Iterapi platform for internet-based psychological treatment. *Internet Interventions, 6,* 107–114. http://dx.doi.org/10.1016/j.invent.2016.09.006

Watson, D., & Clark, L. A. (1992). Affects separable and inseparable: On the hierarchical arrangement of the negative affects. *Journal of Personality and Social Psychology, 62,* 489–505. http://dx.doi.org/10.1037/0022-3514.62.3.489

Watson, H. J., Joyce, T., French, E., Willan, V., Kane, R. T., Tanner-Smith, E. E., . . . Egan, S. J. (2016). Prevention of eating disorders: A systematic review of randomized, controlled trials. *International Journal of Eating Disorders, 49,* 833–862. http://dx.doi.org/10.1002/eat.22577

Welch, E., Birgegård, A., Parling, T., & Ghaderi, A. (2011). Eating disorder examination questionnaire and clinical impairment assessment questionnaire: General population and clinical norms for young adult women in Sweden. *Behaviour Research and Therapy, 49,* 85–91. http://dx.doi.org/10.1016/j.brat.2010.10.010

Welch, E., Lagerström, M., & Ghaderi, A. (2012). Body shape questionnaire: Psychometric properties of the short version (BSQ-8C) and norms from the general Swedish population. *Body Image, 9,* 547–550. http://dx.doi.org/10.1016/j.bodyim.2012.04.009

Wilfley, D. E., Schwartz, M. B., Spurrell, E. B., & Fairburn, C. G. (2000). Using the eating disorder examination to identify the specific psychopathology of binge eating disorder. *International Journal of Eating Disorders, 27,* 259–269. http://dx.doi.org/10.1002/(SICI)1098-108X(200004)27:3<259::AID-EAT2>3.0.CO;2-G

Willett, J. B., & Singer, J. D. (1993). Investigating onset, cessation, relapse, and recovery: Why you should, and how you can, use discrete-time survival analysis to examine event occurrence. *Journal of Consulting and Clinical Psychology, 61,* 952–965. http://dx.doi.org/10.1037/0022-006X.61.6.952

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