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Pilot assessment of two disordered eating prevention programs. Preliminary findings on maladaptive beliefs related to eating disorders

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ABSTRACT

Aims: As eating disorders have severe consequences, they require prevention. We aimed to compare maladaptive beliefs related to eating disorders by following two programs based on media literacy in adolescents at post-test intervention, and after 6 and 12 month-follow-ups. The Male and Female Nutrition and Media Literacy Model preventive program (NUT + MEF + MEM + ML in Spanish) and the Theater Alive program are both based on the same contents, the former being presented in a multimedia and interactive format and the latter in a drama format. Both were compared to a control group without intervention, whose participants received usual classes before the assessments.
Method: Participants were 178 adolescents in the second year of compulsory secondary education from fours schools of Terrassa (Catalonia, Spain). All participants in each school were assigned to the same group, depending on school schedules. A mixed 3 (group: Theater Alive, NUT + MEF + MEM + ML, control) × 3 (time: post-test, 6-month-follow-up, 12-month-follow-up) factorial design was used to evaluate the effect on maladaptive beliefs measured using a CE-TCA tool.
Results: When compared to the control group, both Theater Alive ($d = 0.88$) and NUT + MEM + MEF + ML ($d = 0.60$) obtained lower scores over time, the latter being not statistically significant.
Discussion: The Theater Alive program may produce an effect of cognitive dissonance that might eliminate the discrepancy between the contents of the play and those that are internalized, thus modifying maladaptive beliefs. Participants in the Theater Alive program, as actors in front of an audience, had to defend certain content that was rehearsed over and over again to the point until it became internalized.

1. Introduction

Disordered eating behaviors are psychopathological conditions that usually follow a chronic course. Their treatment is complex, is only effective for 40–50% of patients (Stice, 2016) and produces significant impoverishment of the individual's daily functions.

In an 8-year prospective community study, up to 13% of adolescent females (from 12 to 15 years of age) suffered ED (eating disorders) (anorexia nervosa, bulimia nervosa, binge eating disorder or their subthreshold conditions) according the DSM-5 diagnostic criteria (Stice, Marti, & Rohde, 2013). In another prospective study in males, 2.3% of 14 year-olds had an ED (Allen, Byrne, Oddy, & Crosby, 2013).

The high prevalence of these disorders, their co-morbidity, the tendency toward chronicity, and the enormous suffering that is produced both in those who suffer from them and in their families, makes developing new prevention mechanisms a priority. For this reason, prevention should be aimed at addressing the variables that play an essential role in the development of eating disturbances. Concerns about weight and shape are considered a contributing factor of ED, and collaborate in maintaining them (Eiber, Mirabel-Sarron, & Urdapilleta, 2005; Farrell, Lee, & Shafran, 2005).

At the root of the concerns about shape and weight lie maladaptative cognitions. An example of these maladaptative cognitions might be: "*What I look like is an important part of who I am*", "*When I meet people for the first time, I wonder what they think about how I look*", and "*Before going out, I make sure that I look as good as I possibly can*". Cognitive ED theories highlight the importance of these maladaptive cognitions and consider them to play a causal role in the maintenance of ED-related attitudes (Oltra-Cucarella et al., 2014). There is empirical evidence that these variables predicted dietary restraint, body dissatisfaction, self-esteem and thin ideal internalization, (Spangler, 2002) and compensatory behaviors (Bergin & Wade, 2014).

Cognitive distortions related to body image have been suggested to be better predictors of eating disturbances than the more frequently

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studied variables such as body dissatisfaction. Consistent with this, a positive relationship has been found between cognitive disturbances related to body image and ED (Jakatdar, Cash, & Engle, 2006). Cash (2002) has stated that cognitive distortions concerning body image are essential as precipitants and maintainers of discomfort with one's body image. In this sense, cognitive processes are at the same time a risk and a maintenance factor for ED (Rawal, Park, & Williams, 2010). Prevention program targeting these cognitive variables might therefore be successful in decreasing the incidence of ED.

Very few studies have examined the impact of prevention programs on cognitive variables (Yager, Diedrichs, Ricciardelli, & Halliwell, 2013). Definitions of body image include thoughts, feelings and types of behavior related to physical appearance (Cash & Pruzinsky, 2004), and body dissatisfaction, the most assessed variable, only includes the evaluative component. Few preventive programs have used the maladaptative cognitions as change variables. The aim of this research is to assess the impact of two ED prevention programs on the specific measurement of cognitive variables related to eating and body image.

School-based ED prevention programs have made great progress in the last decade, and provide a means of involving families and communities (Neumark-Sztainer, 2016). The main objectives of these universal preventive programs conducted in schools should be to identify and criticize ideals of beauty, develop critical thinking skills, and challenge the glorification of thinness for girls and a muscular ideal for boys (Levine & Smolak, 2016; Russell-Myhew & Grace, 2016). Media Literacy (ML) includes these approaches for reducing the influence of the beauty ideal (Levine & Smolak, 2006), and has been shown to produce successful results in the literature (Espinoza, Penelo, & Raich, 2013; González, Penelo, Gutiérrez, & Raich, 2011; Stice, Shaw, & Marti, 2007). Our two ED prevention programs are based on Media Literacy, and both were aimed at girls and boys in early adolescence, when the influence of risk factors such as body dissatisfaction are more predictive of its onset, as suggested by Rhode, Stice, and Marti (2014).

The first program had an interactive multimedia format. It consisted of two components: learning basic nutrition (NUT) concepts, and criticism of the male and female aesthetic model through Media Literacy (MEF + MEM + ML). This program, among others, has been classified as a successful preventive program (see in Ciao, Loth, & Neumark-Sztainer, 2014). The NUT component includes: basic notions and specific exercises showing imbalanced menus where the participants have to identify the nutritional deficits or excesses. It also includes ways in which the media convey misleading information about fast food or harmful diets, and encourages the adoption of a critical attitude toward this. The second component -MEF + MEM + ML- includes critical information about the way these are transmitted and treated in the media, along with a session in which the two models are compared.

The second preventive program was based on an example of Theater in Education (TIE) called Theater in Education for Health (THE) by Joronen, Rankin, and Astedt-Kurki (2008). Theater involves learning processes derived from the interaction between fiction and reality that can serve as a rehearsal for real life, and is an excellent context in which to learn by observation and to receive feedback from others. The results of these programs have been presented more extensively elsewhere using a different sample and with other measurements (Mora et al., 2015). To summarize this previous study, in a different sample made up of 200 boys and girls aged 12–15 that received the Theater Alive program or NUT + MEF + MEM + ML program, or a control group, the two experimental groups showed significantly higher self-esteem than the control group time. The NUT + MEF + MEM + ML group also presented lower aesthetic ideal internalization than the control group.

The aim of this study was to compare the effects of both preventive programs, as well as a control group, on ED-related cognitive variables in a mixed school sample from a city in Catalonia, Spain. Participants receiving the NUT + MEF + MEM + ML or the *Theater Alive* programs were expected to display fewer ED-related maladaptive beliefs than the control group without preventive intervention. There is previous evidence that ML programs can produce significant reductions in cognitive variables, for example, Wilksch and Wade (2009) obtained a decrease in shape and weight concerns. In addition, we predicted that our two preventive programs would produce significant changes in cognitive variables, and that this difference would still present 6 and 12 months later.

2. Method

2.1. Participants

The initial sample was made up of 178 adolescents aged 12–15 from the second year of Compulsory Secondary Education in four schools (three urban government-subsidized schools and one urban public school) located in the city of Terrassa (Barcelona, Spain). Table 1 shows the social-demographic data of the initial sample and comparisons between groups: 57.9% were females, the mean age was 13.3 years, and 67.2% had medium-high or high socioeconomic status, whereas higher BMI was found in the Theater Alive group and there were fewer Spanish-born adolescents in the NUT + MEF + MEM + ML group. One hundred and thirty-one participants (73.6%) remained until the final follow-up, with the reduction in sample size being due to absences on the assessment days, changes in school, or blank questionnaires being returned (Fig. 1).

2.2. Material and instruments

2.2.1. Socio-economic level

Socio-economic status based on the parents' educational level and occupation according to the Hollingshead's index (Hollingshead, 1975) was obtained as follows: The status score for an individual is calculated by multiplying the scale value for parental education (rated from 1 to 7) by a weight of three (3), and the scale value for parental occupation (rated from 1 to 9) by a weight of five (5). The computed scores (ranging from a high of 66 to a low of 8) are then classified into five groups of scores: 66–55 high, 54–40 medium-high, 39–30 medium, 29–20 medium-low, and 19–8 low.

2.2.2. Body mass index (BMI)

In situ weight and height measures were taken using 100 g *Tefal Sensitive Computer* scales and a 2 m *Kw 444.440* Kawe measuring board, and the BMI was calculated.

2.2.3. Questionnaire on specific cognitions related to eating disorders (cuestionario de Cogniciones Específicas relacionadas con los Trastornos de la Conducta Alimentaria, CE-TCA) (Abellán, Penelo, & Raich, 2012)

The CE-TCA is a 26-item self-report questionnaire that assesses specific maladaptive cognitions related to ED, based on Beck's cognitive theory and its adaptation for ED patients by Garner and Bemis (1982). The following frequent cognitive distortions in ED are assessed: a) false beliefs about eating, food, dieting and slimming (e.g., "Regardless of my weight, fats, sweets and bread are forbidden food for me, as they always turn into fat", "When I eat dessert, I get fat, therefore, I should never eat it"); b) assumptions that body weight and shape or thinness can serve as the sole or predominant referent for inferring personal value or self-worth (e.g., "If I put on weight, my self-esteem decreases", "My appearance is responsible for many of the things that happen to me"); these beliefs and assumptions are related to construct physical appearance investment (Cash, 2012; Cash & Labarge, 1996); and c) assumption that complete self-control is desirable (e.g., "My ability to deprive myself of food proves I'm better than other people", "I am proud of myself when I control the urge to eat").

Items are answered on a 5-point Likert scale ranging from 1 (*total disagreement*) to 5 (*total agreement*). The total score is calculated by adding all items, after codifying the inverse items. In the original validation study (Abellán et al., 2012), internal consistency ($\alpha = 0.91$) and