ANALYSIS OF MEDIATION AND RECIPROCAL EFFECTS OF CHANGES IN WEIGHT, SELF-ESTEEM, AND EXERCISE IN A **BEHAVIORAL WEIGHT LOSS TREATMENT**

António L. Palmeira ^{1,2}, Pedro J. Teixeira², Marlene N. Silva², David Markland³, Teresa L. Branco², Sandra S. Martins^{1,2}, Cláudia Minderico², Sidónio O. Serpa², Luís B. Sardinha²

¹ University Lusófona of Humanities and Technologies, Exercise and Health Study Center ² Faculty of Human Movement – Technical University of Lisbon, Exercise and Health Laboratory ³ School of Sport Health and Exercise Sciences, Bangor University, Wales



whereas total indirect effects and weight change's specific indirect effects were significant, i.e., only when treatment produced weight loss did the intervention improve self-

esteem.

1. INTRODUCTION

BANGOR

Improving the treatment of obesity remains a critical challenge. Several health behaviour change models, often based on a social-cognitive framework, have been used to design weight management interventions (Baranowski et al., 2003). However, most interventions have only produced modest weight reductions (Wadden et al., 2002) and social-cognitive variables have shown limited power to predict weight outcomes (Palmeira et al., 2007). Other predictors, and possibly alternative explanatory models, are needed to better understand the mechanisms by which weight loss and other obesity treatment-outcomes are brought about (Baranowski, 2006). Self-esteem is one of these possible mechanisms, because is commonly reported to change during the treatment, although these changes are not necessarily associated with weight loss (Blaine et al., 2007; Maciejewski et al., 2005). This possibility should be more evident if the program integrates regular exercise, as it promotes improvements in subjective well-being (Biddle & Mutrie, 2001), with possible influences on long-term behavioral adherence (e.g. diet, exercise). Following the reciprocal effects model tenets (Marsh & Craven, 2006), we expect that the influences between changes in weight, selfesteem and exercise to be reciprocal and might present one of the mechanisms by which obesity treatments can be improved.

PURPOSE

To analyse reciprocal effects among self-esteem, exercise, and weight loss during (and as a result of) behavioral obesity treatment.

3. METHODS

PARTICIPANTS: Subjects were 193 women (BMI=31.1±4.1 kg/m2; Age=38.4±6.7 y), who were randomly assigned to a 12-month obesity treatment program with weekly/biweekly group sessions covering exercise, nutrition, and behavior modification topics (n=144) or a comparison group (n=49), who received a general health education program. No differences were observed between the 32 non-completers (14.3% attrition) and the 193 completers in the baseline assessments of the variables (p>.10), so further analysis was done only with the completers.

MEASURES:All measures and psychometric instruments were assessed at baseline and 12 months. <u>Self-esteem</u>. Selfesteem was assessed with the Rosenberg Self-Esteem Scale RSES (Azevedo & Faria, 2004; Rosenberg, 1965), composed of 10 items answered on a 4-point Likert scale. Higher scores of the RSES represent greater self-esteem (a=.76). Exercise Stage of Change (SOC). Exercise level was assessed with five items in a multiple-choice format (Courneya & Bobick, 2000), where each item represents a stage of change (SOC). Based on the results of this questionnaire, subjects were classified as non-active (i.e., if they were in pre-contemplation, contemplation or preparation SOC); or active (i.e., if they were in action or maintenance SOC). <u>Weight</u>. Weight was measured using an electronic scale (SECA Model 770, Hamburg, Germany), with a standardized procedure.

STATISTICAL ANALYSIS: A mixed models ANOVA was used to analyze the impact of the program on weight and selfesteem. The comparisons for exercise level were assessed by chi-square tests. In the correlational analysis all variables except exercise level, were expressed by the residuals of the 12-month value regressed on the baseline value. Multiple mediation was tested by multiple regression, following procedures described by Preacher and Hayes (2007). Treatment vs. comparison was the independent variable, while changes in body weight, self-esteem, and exercise were analyzed alternatively as mediators and dependent variables (see figure below for more information).



4. RESULTS



Results Summary •Weight loss was only significant in the intervention group.

- Self-esteem improved in both groups. •Changes in self-esteem were associated with weight changes (r=.21, p<.01).
- •The intervention group was more active at 12 months.
- •Exercise partially mediated the treatment effect on weight.

Exercise

∆ Weight

•Treatment did not affected self-esteem directly; only when treatment produced weight loss did the intervention improved self-esteem

=-.03; Ind=

No reciprocal effects were observed

5. DISCUSSION

•Self-esteem have improved in both groups, suggesting that social influences. beyond the specific content of the programs, might induce better evaluations of ourselves.

•Changes in self-esteem were associated with weight changes, signalling that there might be an influence of weight loss on self-esteem's improvement. These results support Blaine et al. (2007) report, strengthening the suggestion that this link should be thoroughly analysed future studies.

•Only weight loss have influenced self-esteem's response to treatment. Blaine and colleagues have proposed that this may be happening because significant reductions in weight prompt us to internalize the more positive body-related appraisals we imagine others to have of us (Blaine et al., 2007).

•The present data does not support the inclusion of self-esteem improvement related contents on obesity interventions.

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antonio.palmeira@ulusofona.pt

