



## The role of pre-treatment proactive coping skills in successful weight management<sup>☆</sup>

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### ABSTRACT

**Objectives:** Proactive coping encompasses future-oriented self-regulatory skills that help people prepare for future difficulties before they occur, such as planning and monitoring. The aim of the present study was to examine the interplay between pre-treatment proactive coping skills and expected difficulties during weight loss in determining successful weight management.

**Method:** Obese and overweight Dutch adults ( $N = 119$ ) who enrolled in a weight management intervention reported their level of proactive coping skills and expected difficulties at the start of intervention. Two months later, weight loss was assessed via self-report.

**Results:** The results show that the detrimental effects of a low level of proactive coping skills were compensated by the expectation that many difficulties would accompany the weight loss attempt. Also, pre-treatment proactive coping skills did not predict weight loss success above and beyond self-efficacy and socio-demographic factors (e.g., gender).

**Conclusion:** It is concluded that future-oriented self-regulatory skills and beliefs about impending difficulties at the start of intervention may have predictive value for subsequent success in weight management.

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### 1. Introduction

Many weight reduction interventions have been implemented in response to the high rates of obesity in the past decades. However, their effectiveness has proven modest at best and differs widely between individuals (Brownell, 2010). To gain insight in why some people succeed in losing weight whereas others fail, research has attempted to identify pre-treatment factors that predict whether interventions are successful (Teixeira, Going, Sardinha, & Lohman, 2005). Most of these studies focused on motivational and demographic characteristics (Teixeira et al., 2005), but no research so far has examined whether people's self-regulatory skills at the beginning of intervention affect their subsequent success. This is surprising as self-regulatory skills are widely acknowledged as an important prerequisite for success in weight loss (Wadden & Foster, 2000). In the present study, we therefore examine whether self-regulatory skills predict successful weight loss in a community sample in the context of a weight management intervention.

The present intervention focuses on future-oriented self-regulatory skills, i.e., proactive coping skills (Aspinwall & Taylor, 1997), which ensure that people anticipate and prepare for future difficulties. Proactive coping skills comprise the accumulation of resources (e.g., social support), the detection of potential future obstacles (e.g., chocolates at a birthday party), preliminary coping efforts (e.g., making a plan to cope with temptation), and the use of feedback after encountering the obstacle (e.g., evaluate whether the plan has worked). Although proactive coping skills can be effectively developed through interventions (Bode, de Ridder, & Bensing, 2006; Thoelen, de Ridder, Bensing, Gorter, & Rutten, 2009), they are also skills that most people already apply to a wide variety of self-regulatory tasks in daily life (Aspinwall, 2005). Moreover, there are factors that predispose some people more than others to foresee and deal with future adverse events, such as education level and future temporal orientation (Ouwendijk, de Ridder, & Bensing, 2008). This suggests that, due to experience or predisposing factors, people may considerably differ in the extent to which they are adept at proactive coping when they enter weight loss treatment. As proactive coping skills are likely to positively influence weight loss (Thoelen et al., 2009), we expect that pre-intervention proactive coping skills predict weight-related success during intervention.

In addition to investigating the role of proactive coping skills, the present study also examines the role of expected difficulties on successful weight management. When people enter weight loss treatment, they typically have a general idea about the difficulties associated with losing weight (Prochaska et al., 1994). Expected difficulties are relevant

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to examine in conjunction with proactive coping skills because both are related to the anticipation of obstacles to goal attainment. However, a crucial difference is that proactive coping entails that people actively prepare for future difficulties, while expected difficulties do not imply active preparation. Few studies have directly examined the impact of expected difficulties on weight loss, of which some have shown that the expectation of difficulties yields more preparation for future obstacles (Aspinwall, 2005; Oettingen & Wadden, 1991; Polivy & Herman, 2002), suggesting that expecting difficulties is beneficial to weight management. However, other studies have shown that expected difficulties may elicit discouragement (Clark, Pera, Goldstein, Thebarge, & Guise, 1996; Prochaska et al., 1994), which implies that it may be detrimental to expect many difficulties during a weight loss attempt. Based on this inconsistency in the literature we have no reason to expect that either many or few expected difficulties are beneficial to success in weight management and therefore we examine this issue in an exploratory fashion. However, we propose that the effect of expected difficulties, whether beneficial or detrimental, is only likely to occur at a low level of pre-treatment proactive coping skills since proactive coping may prepare people for difficulties during weight loss regardless of their expectations of such difficulties.

## 2. Method

### 2.1. Participants

Of the 185 participants who were allocated to the intervention, 66 were excluded from analyses: 31 did not return their baseline questionnaire, 31 dropped out and four participants failed to report their weight after eight weeks of intervention (T1), which is the critical dependent variable in this paper. Multiple separate ANOVAs and Chi-Square tests demonstrated that included and excluded participants did not differ on baseline variables (see Table 1), all  $p < .22$ . The final sample ( $N = 119$ ), consisting of 58 men and 61 women, had an average age of 55.92 years ( $SD = 5.77$ ), and an average BMI of 29.00 ( $SD = 2.00$ ; 69.7% overweight vs. 30.3% obese ( $BMI > 30$ ).

**Table 1**  
Results from hierarchical multiple regression analyses with weight change (T1 – T0) as outcome measure.

	$\beta$	$\Delta R^2$
Step 1		.16**
Gender (0 = male, 1 = female)	.27**	
Education level (1 vs. 3)	.17*	
Education level (2 vs. 3)	.11	
Age	-.11	
Employment status (0 = not employed, 1 = employed)	-.26**	
Self-efficacy	-.10	
Step 2		.04*
Baseline BMI	.21*	
Step 3		.01
Expected difficulties (ED)	-.13	
Proactive coping skills (PC)	-.05	
Step 4		.04**
Interaction ED * PC	.24**	
Model $R^2$		.25**

Beta is based on the final model,  $\Delta R^2$  indicates the change in predicted variance with each new step.

\*  $p < .05$ .

\*\*  $p < .01$ .

### 2.2. Procedure

As the procedure of the intervention is reported elsewhere (Vinkers, Adriaanse, Kroese, & de Ridder, 2014), we provide a brief description of the initial phase of eight weeks of the intervention. This phase entailed three sessions during which participants were taught proactive coping skills in weight management by a) realistic dietary goal setting; b) exploring barriers to goal attainment; c) appraisal of barriers to goal attainment; d) making specific plans for goal attainment; and e) evaluating progress. Measures relevant to the current study aims were employed at baseline (T0) and immediately after the initial phase (T1). Full details of the trial protocol can be found at [www.trialregister.nl](http://www.trialregister.nl), trial number 2791.

### 2.3. Measures

#### 2.3.1. Control variables

Gender, age, education level, and employment status were included as demographic variables. As self-efficacy has been identified as pre-treatment predictor for weight loss (Stubbs et al., 2011), we assessed self-efficacy at baseline by 6 items tapping participants' confidence in successfully self-managing a healthy diet with scores ranging from 1 (*not at all*) to 7 (*completely*);  $\alpha = .80$ .

#### 2.3.2. Proactive coping skills

Proactive coping skills were measured with the Utrecht Proactive Coping Competence scale (Bode, Thoelen, & de Ridder, 2008), a 21-item questionnaire. Participants were instructed to rate the extent to which they had proactive coping skills in the context of weight-management. All items (example: "Making realistic plans") were measured on 4-point scales, ranging from 1 (*not competent*) to 4 (*very competent*);  $\alpha = .87$ .

#### 2.3.3. Expected difficulties

Expected difficulties were measured by one item: "To which extent do you expect difficulties with maintaining weight loss in the long term?", ranging from 1 (*no difficulties at all*) to 7 (*many difficulties*).

#### 2.3.4. BMI and weight loss

Participants reported their height and weight at T0 and T1. Baseline BMI was calculated (weight in kg / (height in  $m^2$ )) and weight change was calculated by subtracting T0 from T1 values.

### 2.4. Strategy of analysis

Analyses were run for the main dependent variable, weight change during the initial phase of the intervention. Prior to analyses, all predictor variables were centered and a two-way interaction term was calculated for proactive coping skills and expected difficulties (Aiken & West, 1991). We employed hierarchical regression analysis with age, gender, employment status, education level and baseline self-efficacy entered in Step 1. In Step 2, baseline self-reported BMI was entered. In Step 3, proactive coping skills and expected difficulties were entered, and in Step 4 the interaction term was included.

## 3. Results

### 3.1. Descriptive statistics

Most participants were employed (68.9%), and completed high/vocational education or higher education (98.4%). Participants had a moderate level of self-efficacy ( $M = 4.64$ ,  $SD = .93$ ), moderate proactive coping skills ( $M = 2.82$ ,  $SD = .37$ ) and expected some difficulties towards weight loss in the long-term ( $M = 4.98$ ,  $SD = 1.25$ ).

### 3.2. Main analysis

Step 1 showed that females, higher educated and unemployed participants lost less weight than their male, less educated and employed counterparts (see Table 1). Baseline self-efficacy and age were not associated with weight change. Step 2 demonstrated that higher BMI predicted less weight loss. Step 3 showed that neither proactive coping skills nor expected difficulties predicted weight change. Step 4, however, showed that the interaction between proactive coping skills and expected difficulties was significant. A simple slopes analysis (Fig. 1) demonstrated that the effect of expected difficulties was not significant for those with high (+1SD) proactive coping skills,  $p = .42$ . For those with low (-1SD) proactive coping skills, however, more expected difficulties yielded more weight loss,  $p = .03$ .

### 4. Discussion

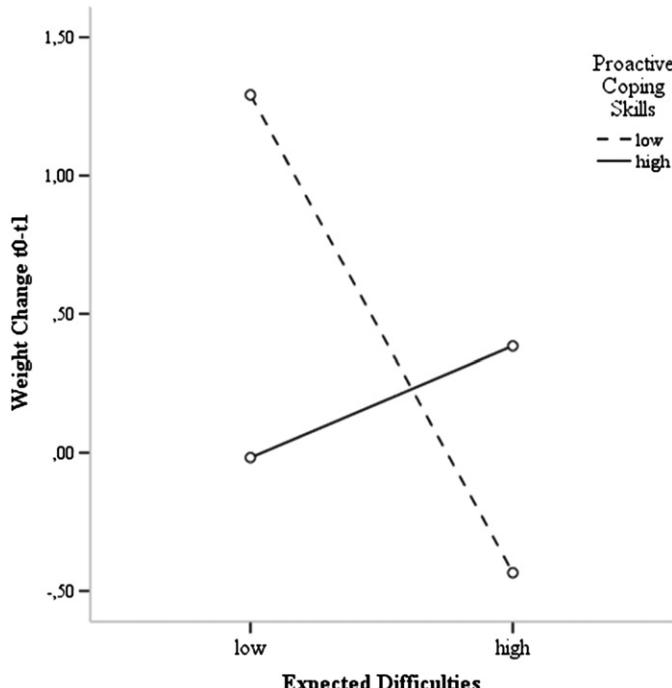
The aim of the current study was to examine the role of proactive coping skills in weight management, and its interaction with the expectation of difficulties during a weight management intervention. As expected, findings show that expected difficulties only differentially affected weight loss when people were relatively unskilled in proactive coping before the start of treatment. Specifically, the expectation of few difficulties during the future weight management attempt resulted in weight gain of 1.5 kg, whereas many expected difficulties led to weight maintenance over the course of two months. These results indicate that when people lack the skills to proactively foresee and deal with future difficulties, they are better off expecting many rather than few difficulties during their weight loss attempt. As an explanation, we propose that the expectation of difficulties may compensate for a lack of proactive coping skills by evoking preparatory actions. Thus, people who expected their weight loss goal to be challenged by situations that would tempt them to (temporarily) give up their goal may have prepared for them, and consequently, successfully managed to maintain their weight. It is also possible that the effects of expected difficulties occurred through motivational mechanisms. Prior research suggests that people strategically match the force with which they pursue a

goal to the motivation and effort needed in light of the goal's difficulty (Silvia, McCord, & Gendolla, 2010). This suggests that the expectation of many difficulties may have boosted motivation to ensure successful weight management despite the presence of these difficulties. Clearly, more research is needed to uncover the mechanism(s) through which expected difficulties affect weight management.

Unexpectedly, we failed to find that more pre-treatment proactive coping skills yielded more success in subsequent weight loss, which contradicts research showing the beneficial role of proactive coping skills in successful weight management (Thoelen et al., 2009). It is interesting, however, that when expected difficulties were taken into account, a high level of proactive coping skills at the start of intervention neither produced weight loss nor weight gain. This may indicate that proactive coping skills play a more important role in weight gain prevention than in weight loss. That is, the hallmark of proactive coping is that people prepare for events that threaten successful goal adherence (Aspinwall & Taylor, 1997), which means that people who engage in proactive coping are successful in warding off events that would have otherwise resulted in lapses into unwanted behavior, i.e., that may have led to weight gain.

Some limitations must be noted. First, we cannot exclude the possibility that the specific treatment that participants underwent may have played a role in the current findings. Second, we only measured relatively short-term weight loss; further research should examine whether the pre-treatment factors under investigation would remain predictive of weight loss over a longer period of time. Third, the effects found in this study were small, which could be partly due to the large number of predictors in combination with the relatively small sample size. It should be noted, however, that the amount of explained variance in the present study is similar to those of prior studies on pre-treatment predictors of weight loss (Stubbs et al., 2011).

Notwithstanding these limitations, the present study has several important implications. First, our research points towards the importance of broadening the scope of potential pre-treatment predictors of weight loss. Specifically, people's future-oriented self-regulatory skills and beliefs about impending difficulties during weight loss should be taken into account when they enter treatment, as they may influence success during intervention. Second, findings indicate that optimistic expectations about weight loss, in this case as manifested by the belief that successful weight management is relatively obstacle-free, may have detrimental effects on success, which supports previous findings demonstrating that being (over) optimistic may not be helpful (Oettingen & Wadden, 1991). This is an important knowledge as it is widely assumed that when people enter treatment, they benefit most from thinking about the positive outcomes rather than the difficulties ahead (Rothman, 2000). Our results imply that explicitly pointing out that many difficulties will ensue before intervention, may be more conducive to success than previously thought.



**Fig. 1.** Weight change from T0 to T1 at high (+1SD) and low (-1SD) values of proactive coping skills and expected difficulties.

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#### Contributors

Vinkers implemented the study, conducted the statistical analyses and literature searches, and wrote the first draft of the manuscript. Adriaanse, Kroese and De Ridder contributed significantly to the study design and protocol, and to the writing and refinement of further drafts of the manuscript. All authors have contributed to and have approved the final manuscript.

#### Conflict of interest

The authors declare no conflict of interest.

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