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# Relation between cognitive restraint and weight: Does a content validity problem lead to a wrong axis of care?

Sabrina Julien Sweerts<sup>1</sup> | Damien Fouques<sup>1</sup> | Baptiste Lignier<sup>2,3</sup> |  
G rard Apfeldorfer<sup>4</sup> | Katherine Kureta-Vanoli<sup>4</sup> | Lucia Romo<sup>1,5</sup>

<sup>1</sup>EA4430 CLIPSYD, UFR SPSE, Paris Nanterre University, Nanterre, France

<sup>2</sup>Department of Psychology, Laboratoire Psy-DREPI, EA 7458, University of Bourgogne Franche-Comt , Dijon, France

<sup>3</sup>Psychotherapy Area, p le B C te-d'Or South of General Psychiatry, La Chartreuse, Dijon, France

<sup>4</sup>Groupe de R flexion sur l'ob sit  et le surpoids (G.R.O.S.), Think Tank on Obesity and Overweight, Paris, France

<sup>5</sup>CMME, Sainte-Anne's Hospital, Unit  Inserm U 894 CPN, Paris, France

## Correspondence

Sabrina Julien Sweerts, EA4430 CLIPSYD, UFR SPSE, Paris Nanterre University, Nanterre, France.

Email: [sabrinajuliansweerts@gmail.com](mailto:sabrinajuliansweerts@gmail.com)

## Summary

The aim of this research is to examine the relation between weight and cognitive restraint (CR), which is the intention to control food intake in order to maintain or lose weight, in a general French population sample. Is CR more prevalent in individuals with obesity than overweight, underweight or normal-weight subjects in this cross-sectional study? Are people affected by obesity non-restrained eaters? A total of 507 French people (80.2% women and 19.8% men), aged 18-78 years, responded to an online questionnaire. It appears that the most used questionnaire measuring CR has content validity problems as it seems to measure effective control and not the intention. Therefore, a numeric scale was used to answer the questions. Even if it is not possible in this study to test a causal link with latent variable modelling, our results seem to show that people with obesity more frequently intend to eat less or to eat healthier and/or to eat less sugar and fat than other people in order to control their weight. However, people affected by obesity do not succeed in so doing. These results raise the question of treatments advocating the increase of self-control. Finally, it would be necessary to obtain a real, scientific consensus on what CR is and on how to measure it in order to study the most effective treatments for people with overweight or obesity.

## KEYWORDS

cognitive restraint, intuitive eating, obesity, overweight, self-control

## 1 | INTRODUCTION

Cognitive restraint (CR) is the intention to control food intake in order to maintain or lose weight.<sup>1-3</sup> The impact of CR on weight is controversial. Many studies have shown a correlation between weight or body mass index (BMI) and CR, either negative<sup>4,5</sup> or positive.<sup>6</sup>

The theory of CR divides people into the "restrained eaters group" or "non-restrained eaters group." It explains that restrained eaters develop an alteration in the internal perception of hunger and satiety,

disinhibition, emotional dysregulation and a decrease of self-esteem and body satisfaction.<sup>3,7-9</sup> However, many studies have shown the opposite and have therefore promoted the increase of CR to treat overweight and obesity.<sup>10</sup>

The question still remains: should we reduce or increase CR in people affected with overweight or obesity? Before trying to answer this question, we should ask another: how can we measure CR?

The Three Factor Eating Questionnaire (TFEQ-21),<sup>11</sup> is the most used questionnaire to assess CR.<sup>4-6</sup> However, this tool could have content validity problems. Indeed, the reading of the items indicates that it measures "effective control" rather than "the intention to control", as shown is Table 1.

**Abbreviations:** BFI, Big Five Inventory; BMI, body mass index; CR, cognitive restraint; PCL, Post-Traumatic Stress Disorder Checklist; TFEQ-21, The Three Factor Eating Questionnaire.

**TABLE 1** Item of the cognitive restraint scale of the TFEQ-21

Item number	Item of the cognitive restraint scale of the TFEQ-21
5	I <i>don't eat</i> some kinds of foods because they can make me fat
11	I <i>eat less</i> than I want at meal times to stop myself from putting on weight
17	How often do you <i>avoid eating</i> or buying tempting foods?
18	How often would you <i>eat less</i> than you wanted to in a meal?
21	What types of eater are you on a scale of 1 to 8? Where 1 means "I eat whatever I want, whenever I want" and where 8 means "I am careful about <i>what I eat</i> to control my weight"

Abbreviation: TFEQ-21, The Three Factor Eating Questionnaire.

The TFEQ-21 could better identify individuals who are currently dieting<sup>12</sup> and succeeding. CR is the intention to control food intake,<sup>13</sup> not the most effective control. This content validity problem—probably due to an unfortunate broadening of its definition—could explain divergent conclusions in the studies. In fact, the two opposite clinical implications—dieting vs no dieting—continue.

The aim of this research is to examine the relation between BMI and CR in a sample of the general French population. First, we will focus on the following questions: is CR more prevalent in individuals with obesity than overweight, underweight or normal-weight subjects? Are people affected by obesity non-restrained eaters?

Moreover, other factors could contribute to explaining BMI, such as personality,<sup>14,15</sup> physical activity<sup>16</sup> and traumatic events.<sup>17</sup> So, the question is: does the CR determine the BMI, and if so, how much does it weigh when the other known factors are controlled?

## 2 | METHODS

### 2.1 | Procedures

A questionnaire was created and administrated via the Qualtrics© secure platform to guarantee security and anonymity. The link to the study was sent via email or via social media (Facebook, LinkedIn). It took 10 minutes to complete the questionnaires. The study followed the ethical guidelines of the Declaration of Helsinki.<sup>18</sup>

### 2.2 | Participants

A total of 507 French people (80.2% women and 19.8% men), aged 18-78 years ( $M = 37.8$ ,  $SD = 13.6$ ), responded to the internet Qualtrics© questionnaire; 6.1% were underweight ( $BMI < 18.5$ ;  $N = 31$ ), 54.2% had normal weight ( $18.5 < BMI < 25$ ;  $N = 275$ ), 24.5% were overweight ( $25 \leq BMI < 30$ ;  $N = 124$ ), and 15.2% were obese ( $BMI \geq 30$ ;  $N = 77$ ).

## 2.3 | Measures

CR was measured using a numeric rating scale (NRS) from 0 to 10. Participants had to answer the question: "How much do you intend to control your diet in order to control your weight?," With 0 corresponding to "not at all, never" and 10 to "tremendously and constantly." Weight and height were filled out by the participants. BMI was calculated.

Personality was measured using the short form of the Big Five Inventory<sup>19</sup> (BFI). This 10-item self-reported measure describes five personality dimensions: E (Extraversion), A (Agreeableness), C (Conscientiousness), N (Neuroticism) and O (Openness).

Physical activity was measured by the Godin Leisure Time Exercise Questionnaire.<sup>20</sup> This questionnaire measures the actual weekly physical activity by noting the number of physical activities of at least 30 minutes depending on the intensity (high, moderate or low).

Finally, the Post-Traumatic Stress Disorder Checklist (PCL) events,<sup>21</sup> a 17-item self-reported scale, was used to measure the intensity of psychotraumatic symptoms.<sup>22</sup> After the subject has claimed to have had a stressful life event and has indicated the date of the most recent event and briefly explained what the event was, he or she is asked to complete, on a 5-point Likert scale, the intensity of the event, with 1 corresponding to "not at all" and 5 to "very often."

## 2.4 | Data analyses

Jamovi was used for statistical analyses. A one-way analysis of variance (ANOVA) was conducted to test the impact of the CR on the BMI. The sample was split into four BMI groups in accordance with the World Health Organization classification (group 1,  $BMI < 18.5$ ; group 2,  $18.5 \leq BMI < 25$ ; group 3,  $25 \leq BMI < 30$ ; group 4,  $BMI \geq 30$ ). Correlations were calculated between CR and weight, between CR and BMI and between weight and all other variables. Finally, all the variables were included in a linear regression model predicting weight.

## 3 | RESULTS

### 3.1 | ANOVA

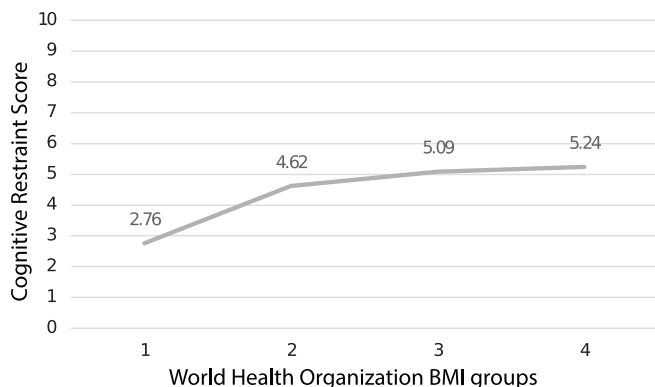
Results showed an association between CR and BMI ( $F[3379] = 9049$ ,  $P < .001$ ) (Figure 1).

### 3.2 | Correlation between CR and weight

CR and weight were positively correlated ( $r = .13$ ,  $P = .008$ ), as well as BMI and CR ( $r = .184$ ,  $P < .001$ ).

### 3.3 | Others significant correlations with weight

BFI N ( $r = -.098$ ,  $P < .035$ ) and BFI C ( $r = -.12$ ,  $P = .010$ ) were negatively correlated with weight, as was PCL-S ( $r = -.148$ ,  $P = .003$ ).



**FIGURE 1** Mean cognitive restraint (CR) based on body mass index (IMCCAT). World Health Organization body mass index (BMI) groups: 1 = underweight group (BMI < 18.5); 2 = (18.5 ≤ BMI < 25); 3 = individuals with overweight (25 ≤ BMI < 30); 4 = individuals with obesity (BMI ≥ 30). CR score: 1 (M = 2.76, SD = 2.83); 2 (M = 4.62, SD = 2.59); 3 (M = 5.09, SD = 2.40); 4 (M = 5.24, SD = 1.92)

### 3.4 | Linear regression

The relationship between all the variables and weight were tested by multiple regression stepwise backward analysis. The statistical parameters associated with the final step of the multiple regression, which represents the best explanatory variables, were as followed:  $R^2 = .253$ ;  $F = 32.3$ ,  $P < .001$ . The final four dependent variables of the model were height, CR, conscientiousness and age (Table 2).

## 4 | DISCUSSION

### 4.1 | People with obesity seem to be restrained eaters

This study shows a positive relation between weight and CR in a sample of the French population. The higher the weight, the higher the CR (Figure 1). Even if it is not possible to test a causal link in this study with latent variable modelling, our results seem to show that people with obesity more frequently intend to eat less and healthier and eat less sugar and fat than other people in order to control their weight. In fact, people affected by obesity do not succeed in so doing.

**TABLE 2** BMI predictors

Predictors	Estimate	SE	t	P value
Intercept	-74.97	14.86	-5.04	<.001
Height	0.83	0.08	9.86	<.001
Cognitive restraint	1.15	0.27	4.27	<.001
Age	0.16	0.050	3.16	.002
Conscientiousness	-0.87	0.38	-2.32	.021

Abbreviations: BMI, body mass index; t, decision statistic.

Although our study cannot prove that decreasing CR would be effective, increasing CR to treat obesity does not seem to be relevant. New studies with latent variable modelling will be necessary.

### 4.2 | The CR concept

To study the most effective treatments for people affected with overweight and obesity, it would be necessary to reach a real scientific consensus on what CR is and on how it could be measured. Is CR effective control or is it intention to control? Is it a two-dimensional concept that comprises effective control and the intention to control? Due to this problem of conceptual definition, there is no consensus about the relation between CR and weight in the literature.

People with obesity undoubtedly have the intention to control their food intake. In this case, why and how would an increase of self-control be effective? And would such an increase be possible? According to Lowe (2015), "Human beings have the potential for much better self-control of their food intake and body weight than has so far been demonstrated."<sup>23</sup> Yet, we may wonder whether self-control can really be a goal in itself and whether it is the unique way to go.

### 4.3 | Another way

Self-regulation is a portion of regulation that includes deliberate and automatic aspects.<sup>24</sup> Deliberate action is necessary to increase self-control or self-regulation. In other words, to avoid eating, one needs to tell oneself not to eat. Yet, according to the ego depletion theory,<sup>25</sup> the injunction "not to eat" decreases the possibility of self-control.

Intuitive eating and/or mindful eating could be another way to go.<sup>26</sup> Intuitive eating is often defined as eating according to internal, physiological cues of hunger and satiety rather than according to external or emotional cues.<sup>27</sup> However, this definition is probably not precise enough. Intuitive eaters eat without thinking about what or how they should eat. They "just eat" and respect their physiological cues with psychological flexibility. Intuitive eaters can eat more than their hunger when they feel the need to or the want to, and they can eat less in the meal after without thinking further about it. They do it "naturally."

Yet, the switch from executive regulations (rules based) to physiological regulations is not as easy as it seems. It is not enough to ask people with overweight or obesity to eat when they are hungry and to stop eating when they are no longer hungry. Indeed, such requests are in fact rules that sound like injunctions and could be CR if followed for the purpose of losing weight.

## 5 | LIMITATIONS

Our study has the following limitations: the recruitment of the subjects did not allow us to obtain a representative sample of the

population, in addition to the size of the sample and the way in which we measured CR, making use of only one item.

## 6 | CONCLUSION

The aim of this research was to examine the relation between weight and CR in a sample of the French population. French people with obesity seem to be more restrained eaters than French people without obesity. Yet, it would be necessary to have a scientific consensus on what CR is and on how to measure it. Indeed, enhancing CR to treat overweight or obesity may not be relevant as people with obesity already have the intention to control their food intake in order to lose or maintain their weight. If intuitive eating may indeed be a way to go, it is not as easy as it seems. As paying attention to physiological cues is a learning process, people with obesity need help to change the way in which they behave with their body.

## CONFLICTS OF INTEREST

No conflict of interest was declared.

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