

In the Spotlight: The Frustration of Basic Psychological Needs and Restrictive or Uncontrolled Eating Behaviors

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Abstract

Introduction: *Eating pathology has become an important issue in the present time as individuals (especially women) are confronted with increased socio-cultural pressures to embody a thin ideal of physical attractiveness. However, eating disorders etiology still raises many challenges as it requires numerous clarifications.*

Objectives: *The proposed objective of this study was to contribute to the understanding of the etiology of restrictive and uncontrolled eating behaviors from the perspective of the self-determination theory (SDT), testing two models of moderation: the moderation effect of dispositional self-control in the relationship between basic psychological needs frustration and uncontrolled eating behaviors, respectively restrictive eating behaviors exhibited.*

Methods: *The sample of participants consisting of 232 subjects (160 females and 62 males, aged between 20 - 50+ years old) completed three self-report scales: Basic Need Satisfaction in Life Scale, Brief Self-Control Scale and Three Factors Eating Questionnaire - Revised 18.*

Results: *The results obtained confirmed only the second moderation model. Thus, dispositional self-control did not prove to enhance the relationship between the frustration of needs and uncontrolled eating behavior, meanwhile it did prove to enhance the relationship between the frustration of basic needs and a restrictive eating behavior.*

Conclusions: *The study contributes to the understanding of the etiology of eating behaviors from the SDT perspective. The results indicated the importance of developing a theoretical model that combines both the quantitative and qualitative dimensions of eating regulation.*

Keywords: *self-determination theory, basic psychological needs satisfaction, dispositional self-control, uncontrolled eating behaviors, restrictive eating behaviors*

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I. Introduction

Despite the large volume of research conducted in the field of eating regulation, the etiology of dysfunctional eating behaviors (uncontrolled, restrictive and emotional eating patterns) is a subject that still requires clarification. Over time there have been postulated many hypotheses and theories regarding their triggering and perpetuating factors (for example, Thin-Ideal Internalization Model, Thompson & Stice, 2001; Self-Objectification Theory, Frederikson & Roberts, 1997; Dietary Restraint Theory, Polivy & Herman, 1985; Self-Control Model; Baumeister & Heatherton, 1996).

A relatively new theory applicable to the eating behavior domain is the Self-determination Theory (SDT; Deci & Ryan, 2000) – a macro-theory of motivation, affectivity and human personality. The theory describes the autonomous and controlled sources of functioning, and also the socio-cultural factors that may facilitate or undermine the sense of initiative and the individual's will, in addition to personal well-being and action quality (Ryan & Deci, 2000). SDT currently includes five mini-theories, but I will focus on the satisfaction of basic psychological needs mini-theory, which is particularly relevant for this study.

Psychological needs are considered essential nutrients for optimal physiological, psychological and social functioning (Ryan & Deci, 2000). According to SDT, there are three basic psychological needs: competence, autonomy and affiliation (Deci & Ryan, 2000).

Competence is the need to feel efficient and able to achieve your goals, autonomy is the need to feel that you exercise your own will, that you are the author of your own actions, while relatedness implies the need to feel close and valued by significant others, to have a sense of belonging in the group of colleagues, family and community (Deci & Ryan, 1985, 2000; Ryan, Deci, Grollnick, & LaGuardia, 2006).

When people continually fail to meet these three basic psychological needs, they develop coping strategies to deal with these psychological deficits. Two such coping mechanisms discussed from the SDT perspective involve the development of need substitutes and compensatory behaviors (Deci & Ryan, 2000; Ryan, Deci, Grollnick, & LaGuardia, 2006).

To attenuate low feelings of need satisfaction, people engage in goals defined as need substitutes, especially involving external indicators of development (such as popularity, physical attractiveness, financial success) (Verstuyf, Patrick, Vansteenkiste, & Taxeira,

2012). The other response to need frustration experience, accompanied by negative emotions, is engaging in compensatory behaviors involving either abandon - alcohol abuse (Knee & Neighbors, 2002; as cited in Verstuyf, Patrick, Vansteenkiste, & Taxeira, 2012), smoking (Williams, Niemiec, Patrick, Ryan & Deci, 2009; as cited in Verstuyf, Patrick, Vansteenkiste, & Taxeira, 2012), binge eating (Heatherton & Baumeister, 1991) or self-control reinforcement (rigid perfectionism, severe dietary restrictions) (Frost & Marten, 1990; Bardone-Cone et al., 2007; as cited in Verstuyf, Patrick, Vansteenkiste, & Taxeira, 2012).

In contrast, when basic psychological needs are met, individuals develop a higher overall self-determination regarding themselves and their social environment (Verstuyf, Patrick, Vansteenkiste, & Taxeira, 2012). General high self-determination reflects the extent to which the person acts based on his/her interests, values and goals, while low self-determined individuals tend to focus more on the pressures and expectations from their social environment (Vansteenkiste, Niemiec, & Soenens, 2010). This can act as a buffer against the sociocultural pressures to have a slim body and against the internalization of the thin ideal self, considered risk factors for body image dissatisfaction and development of eating disorders (Pelletier & Dion, 2007; Thompson & Stice, 2001; Stice, Spangler, & Agras, 2001). Moreover, there is a greater likelihood for people with a higher level of self-determination to engage in activities and to set goals that reflect their own interests and values (for example healthy eating), which creates, in turn, more opportunities to experience the satisfaction of the basic psychological needs (Vansteenkiste, Niemiec & Soenens, 2010).

Although limited in number, studies in the field of eating behavior regulation suggest that unmet psychological needs correlate with more eating disorders symptoms (Bartholomew, Ntoumani, Ryan, & Thøgersen-Ntoumani, 2007), a stronger urge to eat and more binge eating behaviors (Schueler & Kuster; 2011), a greater focus on body image and more rigid functioning (Verstuyf, Patrick, Vansteenkiste, & Taxeira, 2012). On the other hand, a general self-determined motivation seems to protect the individual from the sociocultural pressures to be "slim", the thin ideal internalization and the development of eating disorders (Pelletier & Dion, 2007; Pelletier, Dion, & Lavasque, 2004; Kopp & Zimmer-Gembeck; 2011).

Self-determination theory shows a strong explanatory potential of the etiology of eating disorders

and their prevention and treatment. However, the theoretical model still has some missing pieces. For instance, it is known that need frustration may predict the enactment of restrictive or uncontrolled eating (behaviors intended to compensate the unmet needs) but it is still not known why individuals develop different dysfunctional eating patterns. The research aims to improve the model by adding knowledge with regard to the relationship presented above. More specifically, the objective of this study is to identify factors that may facilitate the development of restrictive eating behaviors, on the one hand, and of uncontrolled eating behaviors, on the other hand, in the case of individuals that experience need frustration.

Starting from the premise that the two categories of individuals (those who develop restrictive eating behaviors and those who develop uncontrolled eating behaviors) do not differ in terms of motivational self-regulation quality of eating behavior (given the fact that both are facing the need frustration experience which results in rather controlled than autonomous behavior), I consider important the investigation of the quantitative dimension of self-regulation. For this purpose I have chosen to analyze dispositional self-control – a personal characteristic relatively stable over time and cross-situationally.

Empirical data showed that people with high levels of dispositional self-control are more capable than others to control their impulses (Mischel et al., 1996; Rothbart et al., 2003; as cited in de Ridder Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012) and report a lower rate of psychopathology and compulsive eating (Tagney, Baumeister, & Boone, 2004).

However, there are more complex situations, cases when the behavior that at first glance seems a self-control failure (for example, smoking, alcohol consumption, or restrictive diets) may actually be enacted in a controlled manner, in order to reach a long term valued goal (for example, acceptance by significant others) (Rown & Vohs, 2011; as cited in de Ridder Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012). This behavior can be defined as desirable, depending on the requirements of the social context or taking into account the aims pursued by the individual.

Moreover, dispositional self-control shows a strong impact variance cross-domain – the academic and work performance is the most influenced, while the impact on the dietary habits is among the least understood (de Ridder et al, 2012). A study by Dvorak and Simons (2009), for example, has shown a positive

correlation between high levels of dispositional self-control (task persistence of the subjects in the experimental group) and the involvement in a number of risky behaviors in the last six months.

Analyzing the overall theoretical and empirical data involving the impact of dispositional self-control and linking them to eating behavior regulation, we can assume that eating regulation will not always follow adaptive goals (a healthy lifestyle), but rather desirable for the individual (social approval and valuing). Since the current socio-cultural context promotes the thin ideal of physical attractiveness, many individuals will try to achieve it. Therefore, we can ask ourselves if in the general context of need frustration and rush to achieve the ideal physical proportions, high dispositional self-control may lead to the development of restrictive eating behaviors, while low dispositional self-control may lead to uncontrolled eating behaviors. As far as I know, based on the scientific literature, no other studies analyzed the moderating effect of dispositional self-control in the relationship between need frustration and enacting either restrictive or uncontrolled behaviors.

The research aims to test two hypotheses: 1. The relationship between need frustration experience and uncontrolled eating behavior will be moderated by dispositional self-control, in that low dispositional self-control will enhance the relationship between need frustration experience and uncontrolled eating behavior; 2. The relationship between need frustration experience and restrictive eating behavior will be moderated by dispositional self-control, in that high dispositional self-control will enhance the relationship between need frustration experience and restrictive eating behavior.

II. Methods

Participants

The sample of participants consisted of 232 subjects, 160 females and 62 males with ages ranging between 20 - 50+ years old, from both rural and urban backgrounds. Most of the adolescents were students at the Economical College Ion Ghica from Bacău. The educational status of the adults ranged from college to bachelor and master/doctoral levels. Their inclusion was made on a voluntary basis. An exclusion criteria was being diagnosed with an eating disorder according to DSM V (bulimia nervosa, anorexia nervosa or binge eating disorder).

Measures

The level of basic psychological needs satisfaction was assessed using the Basic Need

Satisfaction in Life Scale (Gagné, 2003; available on <http://www.psych.rochester.edu/SDT/questionnaires.php>). BNSG measures the general satisfaction of the basic psychological needs (autonomy, competence and relatedness) in the life of the individual. It contains 21 items evaluating the extent to which an individual experiences the satisfaction of the three basic psychological needs on a scale from 1 (not at all true) to 7 (whole true). In order to calculate need frustration, score values were reversed. Higher scores reflect high need frustration, while lower scores indicate low need frustration.

To measure dispositional self-control the Brief Self-Control Scale was used (Tagney, Baumeister & Boone, 2004). The BSCS assesses dispositional self-regulatory behaviors using 13 items rated on a 5-point scale, ranging from 1 (Not at all like me) to 5 (Very much like me) High scores indicate a high dispositional self-control, while low scores indicate a low dispositional self-control.

The evaluation of eating behavior patterns has been done using Three Factors Eating Questionnaire - Revised 18 (Angle et al., 2009). The questionnaire includes 18 items that measure three scales (9 items measure uncontrolled eating, 6 – cognitive restraint and 3 emotional eating). Uncontrolled eating refers to the tendency to eat more than usual due to loss of control over food ingestion and the subjective sensation of hunger, while cognitive restraint involves a conscious restriction of food ingestion to control body weight or to lose weight. Emotional eating reflects the inability to resist emotional stress and the use of food ingestion as a coping mechanism. The response options include a 4 point scale, where high scores correspond to more dysfunctional food patterns and low scores reflect the opposite (Kavazidou et al., as cited in Anglé et al., 2009).

The translation and adaptation of the instruments was made through the translation-retranslation method, with a team of three professionals (two specialized in English and a Romanian-English bilingual person).

Reliability of the scale's items was examined through the alpha coefficient. All instruments obtained Cronbach Alpha coefficients higher than 0.70 (TFQ – Total $\alpha = 0.82$, for Uncontrolled eating $\alpha = 0.83$, for Cognitive restraint $\alpha = 0.79$ and for Emotional eating $\alpha = 0.83$; BSCS $\alpha = 0.84$; BNSG – Total $\alpha = 0.90$, for Autonomy $\alpha = 0.75$, for Competence $\alpha = 0.71$ and for Relatedness $\alpha = 0.81$), showing a good internal consistency.

Body mass index (BMI) was also calculated

considering the data given by the participants on their weight and height. The following calculation formula used was: $\text{weight (in kg)/height (in m)}^2$. The participant's BMI mean was 21.58 (SD = 3.45; range: 15.57 - 38.10). Values ≤ 18.49 indicate underweight and values ≥ 25 indicate overweight. The sample counted 36 underweight participants, 165 normal weight and 28 overweight.

Procedure

Participants were recruited on a voluntary basis either online by posting a link to the survey form or at Ion Ghica Economic College in Bacau at the Informatics courses where they received the link and completed the form.

As a method of data collection, self-report scales had been used. Questionnaires were applied online using Google formats in a predetermined order for all the subjects (BNSG, BSCS and TFQ-R18). Afterwards, there were calculated total scores for each tested variable and for each dimension of dysfunctional eating – "uncontrolled eating" and "cognitive restraint".

In order to verify the two moderation models I have used PROCESS for SPSS, version 2.11, developed by Andrew F. Hayes and the hierarchical regression procedure.

III. Results

The two models were tested using PROCESS for SPSS and hierarchical regression: first of them – the relationship between need frustration and uncontrolled eating behaviors by dispositional self-control and the second – the relationship between need frustration and restrictive eating behaviors by dispositional self-control.

First model analysis

With regard to the first model, the data obtained indicated the absence of a moderating effect of dispositional self-control in the relationship between need frustration and uncontrolled eating behavior. The obtained prediction model is strong ($R = 0.54$), explaining 28.6% of the criterion variance ($R^2_{aj} = 0.286$), a significantly statistical percentage ($p < 0.001$). Yet, the only predictor with a significant influence on uncontrolled eating behavior variance in this model, is dispositional self-control ($B = -0.32$, $t = -8.966$, $p < 0.001$). Need frustration is not a significant predictor of uncontrolled eating behavior variance ($B = -0.03$, $t = 0.590$, $p = 0.555 > 0.05$). The interaction does not add a significant proportion of the explained variance of the criterion variable ($R^2_{ch} = 0.000$, $F_{ch}(1, 228) = 0.058$, $p = 0.810 > 0.05$).

Variables	B	SE	t	p	LLCI	ULCI
Dispositional self-control	-0.32	0.03	-8.71	0.0000****	-0.40	-0.25
Need frustration	0.03	0.02	1.67	0.09 (ns)	-0.007	0.08
Interaction	- 0.001	0.002	-0.78	0.43 (ns)	-0.005	0.002
$R^2_{aj} = 0.286, F(3,228) = 28.533, p < 0.001; R^2_{ch} = 0.000, F_{ch}(1,228) = 0.058, p = 0.810 > 0.05$						

Table 1. Testing moderating effects of dispositional self-control relationship between need frustration and uncontrolled eating behaviors using PROCESS for SPSS and hierarchical regression

The conditional effects of need frustration on uncontrolled eating are not significant at any level of dispositional self-control. Thus, the hypothesis that a low dispositional self-control will amplify the association between need frustration and uncontrolled

eating was not confirmed by the data. However, we note that the effect of conditioning is the strongest in the case of subjects with low self-control, and the lowest in subjects with high dispositional self-control.

Dispositional self-control	Effect	se	t	p	LLCI	ULCI
-9.7243 (low)	.0552	.0393	1.4058	.1618	.0224	.1327
.0000 (medium)	.0393	.0234	1.6776	.0954	-.0070	.0855
9.7243 (high)	.0233	.0193	1.2054	.2299	-.0149	.0615

Table 2. Conditional effect of need frustration on uncontrolled eating behavior at low, medium and high values of the moderator

The moderation effect remained insignificant also after controlling for BMI ($R^2_{ch} = 0.000, p = 0.789 > 0.05$).

Second model analysis

The data obtained for the second model showed the existence of a moderating effect of

dispositional self-control in the relationship between need frustration and restrictive eating behavior ($B = 0.0070, t = 2.899, p = 0.004 < 0.05$). The interaction between the two variables explains in addition a 4.5% ($R^2_{ch} = 0.045$) of the criterion variance, a statistically significant percentage ($p = 0.001 < 0.05$).

Variables	SE	t	p	LLCI	ULCI	
Dispositional self-control	.04	0.04	1.13	0.25	-0.36	0.13
Need frustration	.04	0.02	1.89	0.05	-0.002	0.09
Interaction	.007	0.002	2.95	0.003	0.002	0.01
$R^2_{aj} = 0.054, F(3,156) = 5.102, p = 0.002 < 0.05; R^2_{ch} = 0.045, F_{ch}(1,228) = 10.98, p = 0.001 < 0.05$						

Table 3. Testing moderating effects of dispositional self-control relationship between need frustration and restricted eating behaviors using PROCESS for SPSS and hierarchical regression

The conditional effects of basic psychological needs frustration on restrictive eating behavior are

significant only at high levels of dispositional self-control, as we presumed.

Dispositional self-control	Effect	se	t	p	LLCI	ULCI
-9.7243	-.022	.034	-.667	.50	-.090	.044
.0000	.048	.025	1.896	.05	-.002	.098
9.7243	.119	.036	3.321	.001	-.048	.190

Table 4. Conditional effect of need frustration on restrictive eating behavior at low, medium and high values of the moderator

The interaction plot shows stronger correlations between need frustration and restricted eating behavior for subjects with high dispositional self-control than for those with medium or low dispositional self-control.

This suggests that dispositional self-control has an amplifying moderating effect on the positive association between need frustration and restrictive eating behavior, confirming the expectations outlined above.

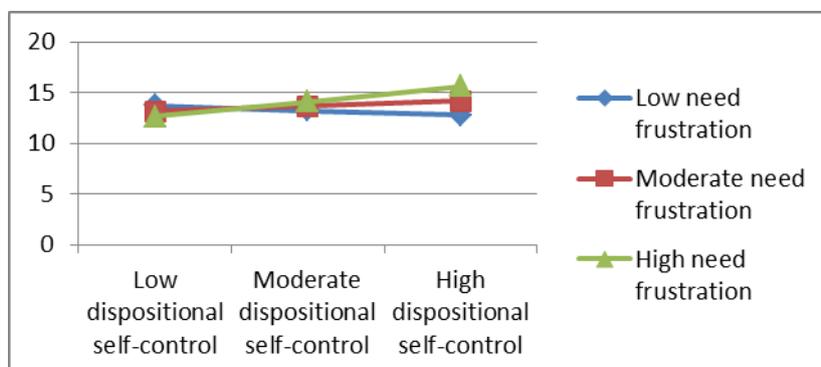


Fig 1. The plot with interaction effects of need frustration and dispositional self-control on restricted eating behavior

VI. Discussion

Through this study, it was attempted to make a contribution in terms of understanding why people who experience need frustration develop either uncontrolled or restrictive eating behavior patterns. The two models of moderation tested took into account the influence of dispositional self-control in this equation. Although it was expected that dispositional self-control would moderate the relationship between need frustration and uncontrolled eating behavior, as well as between need frustration and restrictive eating behavior, only for the last model the moderating effect was significant.

In the first model, the results have shown that regardless of the level of need frustration, low levels of dispositional self-control correlate stronger with higher levels of uncontrolled eating behavior compared with average and high levels of dispositional self-control. Also average levels of dispositional self-control correlate stronger with higher levels of uncontrolled eating behavior compared with high levels of dispositional self-control. This data indicates the importance of the quantitative dimension of self-regulation, given by dispositional self-control, in the eating behavior regulation context – consistent with the results of previous studies carried out in this field (Baumeister & Muraven, 2000; Baumeister, Vohs, & Tice, 2007; Tagney, Baumeister, & Boone; de Ridder Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012).

It is well known now that undercontrolled individuals tend to express affect and impulses relatively immediately and directly even when doing so may be socially or personally inappropriate. They experience difficulties in delaying gratification, confront with fluctuating emotions, are easily distracted, and relatively unbound by social customs (Block, 2002; Funder & Block, 1989; as cited in Letzring, Block and Funder, 2004). These personal characteristics may easily conduct them into disinhibited eating situations as a result of failure in delaying gratification (indulging themselves in immediate eating pleasure at the cost of the negative impact of this over their health and physical shape on the long term) or failure in regulating emotions. It is also known that binge eating is strongly related to emotion regulation difficulties (Whiteside et al., 2007; Tice, Bratslavsky, Baumeister, 2001). Thus, individuals with low dispositional self-control might put in act uncontrolled eating as a result of general difficulties in inhibiting impulse and control behavior but also as a result of emotional vulnerability.

However, the fact that need frustration was not a significant predictor of uncontrolled dietary habits puts into question the link between the two. More empirical studies are required in order to better clarify this aspect. Need frustration might transform in excessive eating in order to compensate this deficit only in the case of certain individuals – for example in those who find greater pleasure in eating (hedonic eaters).

On the other hand, the results confirmed that dispositional self-control enhances the relationship between need frustration and displaying restrictive eating behaviors. This can be explained by the fact that frustration of the needs of competence, autonomy and relatedness determines the individual to develop need substitutes (targeting external indicators of development such as popularity or physical attractiveness) and restrictive compensatory behaviors (strengthening self-control by enacting a rigid perfectionism, constricted eating behaviors) (Verstuyf, Patrick, Vansteenkiste, & Taxeira, 2012). In this context, it is easy to assume that individuals with a stronger capacity for self-control will have greater "success" regarding the restraint of their eating behaviors.

In addition, it is known that people that lie at one of the two extremes of self-control (high vs low level) have a lower capacity of resilience than people with average levels – they will have difficulties in adapting behavioral self-control depending on the situation (Carver, 2005). Thus, they will be more prone to manifest rigidity in eating regulation.

The generalization of the data obtained on Romanian population should be done with caution, since the study involved mostly subjects from the Moldova district: Bacau, Iasi and Neamț cities.

As a future research direction I consider useful a closer analysis of the relationship between need frustration and uncontrolled eating behaviors, this study indicating a weak association between the two.

More studies need to be done in order to gather more proofs about the relationship between need frustration experience and enacting either uncontrolled or restrictive eating behaviors. We should take into consideration that uncontrolled eating behaviors may be determined to a greater extent by the quantitative dimension of eating regulation (dispositional self-control) then by the qualitative one (eating regulation motivation). Longitudinal studies and the inclusion of both clinical and non-clinical samples in this analysis would contribute to a clearer understanding of this relationship.

V. Conclusions

In the last decades, eating regulation gained even more attention from researchers. SDT offers a valuable perspective on dysfunctional eating behaviors etiology, focusing on the motivational dynamics of eating regulation. Thus, the self-determination mini-theories still have certain missing pieces. One of them involves the factors that determine individuals who experience need frustration to develop either

uncontrolled or restrictive eating behaviors. This study attempted to examine dispositional self-control as a potential explanatory factor of this relationship.

Although in this study dispositional self-control showed not to be a significant moderator for the relationship between need frustration experience and uncontrolled eating behavior, it was a significant moderator for the relationship between need frustration experience and restrictive eating behavior. Future studies need to be conducted in order to better understand this relationship.

Dispositional self-control showed an enhancing effect of need frustration experience on restrictive eating behavior. This fact indicates the potential risk of rigid regulation. Having a high self-control capacity could act as a strength as long as it's supplemented by flexibility. If not, individuals that experience need frustration are only prone to enhance the enactment of restrictive dieting as a compensatory behavior for the unmet needs.

The relationship between need frustration experience and dysfunctional eating behaviors etiology still needs to be examined for a better understanding. Also, it will be useful to develop a theoretical model that combines both the quantitative and qualitative dimensions of eating regulation.

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