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Dysfunctional eating behaviors in adolescents: a SDT perspective

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ABSTRACT

Background: This paper contains four research contributions made by psychology students within the theoretical framework of Self-Determination Theory.
Method: The aim was to investigate the relation between dysfunctional eating behaviors and some related variables, such as basic psychological needs, psychological control, alcohol abuse, body self-esteem, relation anxiety, emotional dysregulation, restrained and emotional eating in 322 adolescents. For each of the variables to be investigated, specific self-report scales were administered.
Results: The studies show how satisfaction/frustration of basic psychological needs and emotional dysregulation affect the eating behavior of adolescents. Relationship anxiety, lower satisfaction of basic needs, along with changes in body image, lead to alcohol abuse and emotional eating, especially in females who report higher scores in emotional eating than male adolescents.
Conclusions: Further implications of these results for understanding the dysfunctional eating behaviors in adolescents are discussed in the conclusions section of this paper.

Keywords: *Basic psychological needs, Emotional eating, Emotional regulation*

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Introduction

Adolescence represents a crucial phase for the development of the individual. Françoise Dolto defines it as "a phase of mutation" in which the individual is fragile and vulnerable (Dolto, 2014); for this reason, it is an age to watch out for. The understanding of risk behaviors that occur in this period of the life cycle can contribute to the definition of interventions that develop positive values by promoting behaviors oriented towards a healthy lifestyle. One of the risks associated with adolescence concerns dysfunctional eating behaviors. In this delicate phase of the life cycle, changes in body image can influence eating behavior (Dalla Ragione & Mencarelli, 2016) which can become dysfunctional such as alcohol abuse and emotional eating. In the literature emerges that eating disorders are associated with emotional dysregulation as it seems that food intake is a strategy aimed at avoiding negative emotions (Altheimer & Urry, 2019; Barberis, et al., 2018; Evers, et al., 2018); this can affect physical health. Furthermore, dysfunctional eating behaviors represent an antecedent of eating disorders such as binge-eating disorder (BED) and night-eating syndrome (NES) (Dingemans, et al., 2017), as well as being risk factors for obesity (McCuen - Wurst, et al., 2018). Psychological research moves to investigate what are the variables involved in trying to understand their links. According to the Self-Determination Theory (SDT; Ryan & Deci, 2017), people are active organisms skillful of self-regulating to deal with life events and plan following satisfying goals (Deci & Ryan, 2002). One of the cardinal theories of SDT is the basic needs theory (BNT) elaborated on the concept of basic psychological needs: autonomy, competence and relatedness. The satisfaction of these needs is linked to the well-being of the individual and frustration represents a risk factor for psychological distress and psychopathology (Ryan & Deci, 2017; Van Hooff & De Pater; 2019). Following the Self-Determination Theory (SDT; Ryan & Deci, 2017), four studies have been developed. Each of these studies, processed by students during the first year of Clinical and Preventive Psychological Sciences and Techniques, focuses on different variables. The first contribution examined the correlation between basic psychological needs, emotion regulation, and the link with eating behavior, in particular emotional eating. The second contribution has highlighted the link between emotional feeding, emotional dysregulation, and relational anxiety in adolescents, in accordance with the literature (Christensen, 2019). The third contribution highlights the correlation between body self-esteem, emotional eating, and alcohol abuse. Finally, the fourth contribution considered the link between parenting and dysfunctional eating behaviors in adolescents.

Method

Participants

322 adolescents between 14 and 17 years of age (M = 16.01; SD = .77) participated in the research: 137 were males and 185 females. All participants were Italian and attended high school. 82% of the parents were married, 10% separated and the remaining 8% cohabiting. Regarding parents' education, 30% of fathers had the middle school certification, 44% had a high school diploma, and 26% had a first level degree. Furthermore, 26% of mothers had the middle school certification, 46% had a high school diploma, and 28% had a first level degree.

Procedure

The subjects were recruited among friends and acquaintances of psychology students. Before filling out the questionnaires, both parents of adolescents signed the informed consent and participants were reassured of the anonymity of their responses. The protocol took about 20 minutes to be completed. Once the entire sample of data was collected, each group of psychology students worked on specific objectives, giving rise to the four contributions set out below. The data were then analysed using IBM SPSS.

Measures

Questionnaire on Dutch eating behavior (DEBQ; Dakanalis et al., 2013; Van Strien et al., 1986) to evaluate eating behaviors. Two subscales on a 5-point Likert response scale ranging from 1 (Never) to 5 (Very often) were used in this study: Restrictive Eating (e.g. "When you've eaten too much, try to eat less than usual the next day"), consisting of ten items, and Emotional Eating (e.g. "Feel the desire to eat when you are alone"), consisting of thirteen items. In the present study Cronbach's alphas is .90 both for Restrictive Eating and Emotional Eating.

Alcohol Use Disorders Identification Test (AUDIT; Hodgson et al., 2002) was used to evaluate alcohol use. It's a ten-item scale (e.g. "How often do you consume an alcoholic beverage?") on a 5-point Likert response scale from 0 (never) to 4 (four or more times a week). In this study, internal consistency is satisfactory (α = .86).

Basic Psychological Need Satisfaction and Frustration Scale (PBNSF; Chen, et al., 2015) was used to evaluate the satisfaction of the three basic psychological needs (Autonomy, Relatedness and Competence). This scale is made up of 24 items on a 5-point Likert response scale (1 = Not at all agree; 5 = Strongly agree). Some examples of items are: autonomy ("I feel that I am doing what really interests me"), competence ("I feel I can successfully complete difficult tasks") and relatedness ("I feel a feeling of warmth with the people I spend my time with"). In the present study Cronbach's alphas is good for all the subscales (Autonomy: .67; Relatedness: .79; Competence: .84).

Emotion Regulation Scale (ERS; Roth, et al., 2009): it consists of 20 items on a 4-point Likert response scale and is used to assess the emotional regulation. In this study only the subscale Emotional dysregulation (six items) was used (e.g. "When I am stressed or anxious, I usually feel that I have little control over my behavior"). In this study, the internal consistency of this scale is satisfactory (α = .74).

Social Interaction Anxiety Scale 6 (SIAS-6; Peters, et al., 2012) was used to evaluate the presence of anxious symptoms in relationships. It's a six-item scale (e.g. "I feel uncomfortable when I am alone with one person") on a 5-point Likert response scale (0 = Complete disagreement; 4 = Complete agreement). In the present study Cronbach's alphas is good (α = .77).

Body Self Esteem (BSE; Confalonieri et al., 2008); it consists of 14 items on a 4-point Likert scale from 1 (Never) to 4 (Always) and was used to assess the perception of Body self-esteem (e.g. "If I could, I would change a lot of things about my appearance"). In this study, the internal consistency of this scale is satisfactory (α = .64).

Perceptions of Parenting Scale (POPS; Robbins, 1994) allows to have an overall score of parental autonomy support. It is a six-item scale (e.g. "When possible, my parents let me make the decisions independently") using a five-point Likert scale ranging from 1 (not at all true) to 5 (very true). In this study, the internal consistency is satisfactory (α = .84).

Psychological Control Scale (PCS; Barber, 1996) was used to assess parental psychological control. It is an eight-item scale (e.g. "My parents try to change my way of thinking") on a 7-point Likert response scale ranging from 1 (It is not so) to 7 (It is mostly so) used to estimate perception of parental psychological control. In this study the alpha value is .82.

Contribution 1: **Basic psychological needs and dysfunctional food behaviors**

During adolescence, the frequency of problematic eating-related behaviors is very high. The literature has tried to investigate personal and contextual factors that could be predictive of the emergence of such behaviors (Story, et al., 2002). Within the theoretical framework of Self Determination Theory (SDT), the satisfaction of basic psychological needs is recognized as the necessary condition for functional and healthy development of adolescents (Vandenkerckhove, et al., 2019). In light of these premises, this research aims to investigate how the satisfaction of basic psychological needs can be correlated with eating behaviors and if there can be differences related to gender.

322 adolescents between 14 and 17 years of age (M = 16.01; SD = .77) participated in the research: 137 were males and 185 females. All participants compiled: *Basic Psychological Need Satisfaction and Frustration Scale* (PBNSF; Chen, et al., 2015) to evaluate the satisfaction and frustration of the

three basic psychological needs (Autonomy, Relationship, and Competence); and *Questionnaire on Dutch eating behavior* (DEBQ; Dakanalis et al., 2013) to evaluate emotional and restrained eating.

Gender		Autonomy	Relatedness	Competence	Restrained eating	Emotional eating
Male	M	3.94	4.12	3.88	2.22	2.10
	SD	.65	.70	.78	.93	.84
Female	M	3.91	4.17	3.65	2.53	2.56
	SD	.64	.77	.85	.96	.90

Table 1: Descriptive statistics

Table 1 shows descriptive statistics for basic psychological needs and eating behaviors in males and in females. No significant differences emerged in need of autonomy [t (320) = .404; p = .686] and in the need of relatedness [t (320) = - .669; p = .504]. Substantial differences, however, emerged in need of competence [t (320) = 2.484; p = .013], with females lower than males. Women also had significantly higher scores in the restrained eating [t (320) = - 2.878; p = .004] as well as in emotional eating [t (320) = - 4,686; p <.001]. Furthermore, emotional eating correlate negatively with the satisfaction of relatedness [χ^2 (327) =- .153; p = .005] and competence needs [χ^2 (327) = - .208; p < .001], while restrictive eating did not correlate with basic psychological needs.

In accordance with the literature analyzed (Striegel, et al., 2009; Thaiposri & Reece, 2020), it emerged that the female population has a greater chance of developing a dysfunctional eating disorder than the male population. Furthermore, our results found that, in particular, emotional eating, compared to restrictive eating, is more correlated with the satisfaction of basic psychological needs (Verstuyf, et al., 2013). Given the strong relationship between emotional eating and eating disorders, it is necessary a more targeted psycho-educative intervention to help adolescents to satisfy their needs of autonomy, relatedness and competence, in order to reduce the use of dysfunctional eating behaviors to overcome the sense of frustration experienced when these basic needs are not met.

Contribution 2: Research on emotional eating, emotional dysregulation, and relational anxiety in adolescents

Emotional dysregulation can be considered the inability to manage the intensity and duration of negative emotions (Christensen, 2019). Its prolonged effects can be intense from a physical point of view, since it can lead to what is called emotional feeding. Emotional eating is a phenomenon that regulates interpersonal emotions and, in some cases, derives from risk factors, such as behaviors of excessive food intake or eating disorders (Christensen, 2019). Furthermore, relational anxiety is a common experience among adolescents that usually is related to a lower emotional regulation

(Klemanski, et al., 2017). Given these premises, this study aims to investigate whether emotional eating is related to emotional dysregulation and relationship anxiety, and whether there are differences between male and female adolescents.

322 teenagers between 14 and 17 years old (M= 16.01; DS=.77) participated to the research. Participants completed: *Emotion Regulation Scale* (ERS; Roth et al., 2009) to evaluate emotional regulation; *Social Interaction Anxiety Scale* 6 (SIAS-6; Peters et al., 2012) to evaluate the presence of anxious symptoms in relationships; *Dutch Eating Behaviour Questionnaire* (DEBQ; Dakanalis et al., 2013) to evaluate emotional eating.

Gender		Dysregulation	Relation anxiety	Emotional eating
Male	M	2.41	.93	2.10
	SD	.74	.73	.84
Female	M	2.67	.94	2.56
	SD	.78	.80	.90

Table 2. *Descriptive statistics*

Significant differences were found between males and females in emotional dysregulation [t (320) =-2.986; p= .003], as in the emotional eating [t (320) = - 4.686; $p < .001$], with females reporting higher scores than males (Table 2). No significant differences emerged in the relational anxiety value. Furthermore dysregulation, relational anxiety and emotional eating are positively correlated with each other: from the analyzes emerges a positive correlation between dysregulation and relational anxiety [$\chi 2$ (327) = .312; $p < .001$], a significant positive correlation between dysregulation and emotional eating [$\chi 2$ (327) = .273; $p < .001$] and a significant positive correlation between relational anxiety and emotional eating [$\chi 2$ (327) = .297; $p < .001$].

The results of our studies highlight that emotional eating correlates not only with emotional dysregulation but also with relational anxiety (Christensen, 2019; Klemanski et al., 2017). Considering the limitations of the present study (small sample, use of self-reports, cross-sectional nature of the study), subsequent studies will be able to deepen these relationships by analyzing their evolution over time. Since the female population is the one most at risk for the emergence of eating disorders, it is necessary to initiate psychoeducational intervention programs aimed at helping adolescents to better manage their emotions and reduce anxiety related to relationships.

Contribution 3. Body self-esteem, emotional eating, and alcohol abuse

Body image is defined as the appearance of the human body that each of us makes up in their mind, such as the body seems to us (Schilder, 1935). According to recent studies (Rogers et al., 2019), the dissatisfaction deriving from their body image can have an impact on eating and the use of alcohol

in adolescents, because people could respond to an emotionally stressful situation with the wrong way of eating and with the use of alcoholic substances. This study has the objectives of investigating emotional eating and the use of alcohol in correlation with body image and finding any gender differences.

322 adolescents between 14 and 17 years old (M=16.01; SD=.77) participated to the study (137 male and 185 females). All participants compiled: *Body Self Esteem* (Confalonieri et al., 2008); *Dutch Eating Behaviour Questionnaire* (DEBQ; Dakanalis et al., 2013); *The Alcohol Use Disorders Identification Test* (AUDIT; Hodgson et al., 2002).

Gender		Emotional eating	Alcohol use	Body self-esteem
Male	M	2.10	.71	2.18
	SD	.84	.67	.40
Female	M	2.56	.58	2.17
	SD	.90	.66	.41

Table 3. *Descriptive statistics*

The differential analysis has evidenced significant differences between males and females in the emotional eating [t (320) = - 4.686; p < .001] with females reporting higher scores than males (Table 3). Furthermore, significant correlations were found between Emotional Eating and Alcohol use [χ^2 (326) = .231; p <. 001]; Emotional Eating and Body self-esteem: [χ^2 (327) = - .260; p < .001]; and between Alcohol use and Body self-esteem: [χ^2 (326) = -.155; p = .005].

Consisting with the reference literature, the results of our study highlight that there are no differences between males and females in the use of alcohol (Danzo, et al., 2017). Furthermore, from our analyzes it emerges that the perception linked to one's body correlates with dysfunctional use of alcohol or feeding. These results in line with the reference literature (Carbonneau, et al., 2020) which underlines how body image plays an important role in eating disorders, highlights how it is necessary to intervene in a preventive key to favor a more adaptive development in adolescents and avoid the consolidation of habits related to use of inadequate food or alcohol.

Contribution 4. Parenting and dysfunctional eating behaviors in adolescents

Parenting could be defined as the process of promoting and supporting the physical, emotional, social, and intellectual development of a child from infancy to adulthood (Baumrind, 1991; Benedetto & Ingrassia, 2017). Literature has amply demonstrated how parenting styles and parental feeding are correlated with eating behaviors not only in childhood but also in adolescence (Hughes & Power, 2018). However, studies investigating how parental psychological control (a parental practice that aims to exercise control over the psychological world of adolescents through intrusive

techniques, such as guilt induction, love withdrawal, and invalidation of feelings: Barber, 1996) and autonomy support (a parental practice that tend to encourage autonomous and volitive children's behaviors (Soenens et al., 2007); relate to adolescent eating behaviors are still insufficient. This research aims to investigate the relation between psychological control, autonomy support, emotional and restrictive eating and whether there are differences between males and females in these variables.

322 adolescents between 14 and 17 years of age (M = 16.01; SD = .77) participated in the research (137 males and 185 females). All participants compiled: *Perceptions of Parenting Scale* (POPS; Robbins, 1994) in order to assess parental autonomy support; *Psychological Control Scale* (PCS; Barber, 1996) to evaluate parental psychological control; *Dutch Eating Behaviour Questionnaire* (DEBQ; Dakanalis et al., 2013) to assess emotional eating and restrained eating.

Gender		Emotional eating	Restrained eating	Psychological control	Autonomy support
Male	M	2.10	2.22	2.81	5.06
	SD	.84	.93	1.10	1.14
Female	M	2.56	2.53	2.82	4.99
	SD	.90	.96	1.34	1.37

Table 4. *Descriptive statistics*

Differential analyzes revealed significant differences between males and females in emotional feeding [t (320) = 4.686; p < .001] as well as restrictive nutrition [t (320) = 2.878; p = .004], while no significant differences were found in psychological control and in the autonomy support (table 4). Furthermore, correlational analyzes revealed positive correlations between psychological control and emotional eating [χ^2 (327) = .184; p < .001], a negative correlation between psychological control and autonomy support [χ^2 (327) = -.558; p < .001] and a positive relation between emotional eating and restrained eating [χ^2 (327) = .110; p = .046]. There are no other significant correlations.

Our results show that psychological control as an intrusive and manipulative parenting practice has a strong link with emotional eating. This is not surprising as the literature demonstrates how psychological control by continually invalidating the psychological and emotional world of children does not favor the emergence of good emotional regulation (Cui, et al., 2014), a protective factor against the onset of dysfunctional eating behaviors. Subsequent studies will have to further investigate these results through longitudinal drawings and overcoming the limitations of this research. However, the application implications of this research are important: specifically, it's necessary to program parent training to help parents implement parenting practices that support autonomy and favor the development of emotional regulation in their children.

Conclusion

More studies have highlighted the need to investigate which factors influence the psychological well-being in adolescents (Guerra-Bustamante, et al., 2019; Guo, et al. 2018). According to the SDT, the frustration of basic psychological needs is implicated in the manifestation of psychological distress and dysfunctional behavior. The frustration of psychological needs seems to be correlated to psychological control (Costa, et al., 2019; Inguglia, et al., 2018) and it is highlighted in literature how psychological control is a form of maltreatment that affects the emotional regulation in the individual (Morris, et al., 2017). The period of adolescence, characterized by great changes, is proposed as a phase of the life cycle in which to promote preventive interventions for psychophysical health to identify those risk factors that determine dysfunctional behaviors between including those related to food. Emotional dysregulation, resulting from an unsupportive environment and dysfunctional parenting practices (Morris, et al., 2017), appears to be related to various variables such as relationship anxiety, alcohol abuse, body self-esteem, and dysfunctional eating behaviors such as restrictive and emotional eating. The four research contributions questioned the variables involved in dysfunctional eating behaviors in adolescents. From the statistical analyzes in the first research contribution, it emerged that emotional eating, compared to restrictive eating, is more correlated to the satisfaction of basic psychological needs (Verstuyf, et al., 2013) and especially in women there are scores higher in emotional eating than males (Thaiposri & Reece, 2020). The second research contribution highlights how emotional eating is correlated not only with emotional dysregulation but also with relational anxiety (Christensen, 2019; Klemanski et al., 2017). The statistical analyzes of the third research contribution showed that there are no differences between males and females in the use of alcohol (Danzo et al., 2017) and that the perception linked to one's body is correlated with the dysfunctional use of alcohol or nutrition (Carbonneau et al., 2020). Finally, the static analyzes of the fourth research contribution show, in line with the literature, the link between psychological control as a dysfunctional parenting practice and emotional eating (Cui et al., 2014). The results that emerged make us reflect on the importance of prevention that can affect parent training, in particular as regards support for autonomy, to prevent emotional dysregulation from having an impact on the well-being of adolescents.

Students' research contributions have some limitations. One of the major limitations is that studies were made by students that have poor knowledge of the research methodologies. A further limitation is the cross-sectional nature of the data. Furthermore, the studies are based on only self-reports of the study variables. Future research could take into consideration the present limitations and correct them, considering these contributions' results to investigate more the background and

structuration of dysfunctional eating behavior in more phases of the life cycle. Despite the highlighted limitations, studies show results with important application areas especially in the field of prevention. Especially, preventive interventions should take into account the emotional process, for example through psychoeducation. Furthermore, implement intervention programs for parents to promote knowledge of parenting practices that are functional to the psychophysical well-being of adolescents.

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All authors take responsibility for the integrity of the data and the accuracy of the data analysis. All authors contributed to and have approved the final manuscript.

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