

Disordered Eating Attitudes and Behaviors in Overweight Youth

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Disordered eating attitudes and behaviors appear to be quite common in youth, and overweight youth have been identified as a subset of the population at particularly high risk for endorsing such symptoms. Overweight and eating disorder (ED) symptomatology independently confer significant threats to one's physical and psychosocial health, showing strong links with body weight gain and risk for ED development. When concurrent, the risk for negative health outcomes may be compounded. The purpose of this article is to review the current state of the literature as it concerns disordered eating and its correlates in overweight children and adolescents. Extant literature on the prevalence, distribution, correlates, and etiology of disordered eating attitudes and behaviors (i.e., negative attitudes toward shape and weight, unhealthy weight control behaviors, and binge eating) in overweight youth is reviewed and consolidated in order to make assessment and treatment recommendations for healthcare providers. The current literature suggests that early detection of disordered eating in overweight youth should be a priority to provide appropriate intervention, thereby helping to slow the trajectory of weight gain and prevent or reduce the long-term negative consequences associated with both conditions. Future research should focus on explicating developmental pathways, and on developing novel prevention and treatment interventions for overweight youth exhibiting disordered eating patterns.

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Approximately 17% of children and adolescents are overweight (1), with a BMI (weight in kg/height in m²) at or above the 95th percentile for age and sex. Childhood overweight is associated with an increased risk of disordered eating symptoms including excessive shape and weight concerns, dieting and other unhealthy weight control methods, and binge eating (2–5), an association that has been observed in adults as well (e.g., see refs. (6,7)). This is concerning not only because of the negative health consequences associated independently with both overweight and disordered eating (8–15), but also because each condition may perpetuate the other. That is, childhood overweight increases the risk for disordered eating (16), and simultaneously, disordered eating predicts further weight gain (17–19). Moreover, childhood

overweight and disordered eating are risk factors for full-syndrome eating disorders (EDs; i.e., anorexia nervosa, characterized by refusal to maintain an adequate body weight; bulimia nervosa, characterized by recurrent binge eating accompanied by compensatory behaviors; and binge eating disorder, classified under eating disorder not otherwise specified, characterized by recurrent binge eating in the absence of compensatory behaviors (20–22)). Thus, a comprehensive review of the literature concerning disordered eating attitudes and behaviors among overweight youth is needed in light of the high degree of association between the two syndromes. This article reviews the prevalence and distribution, correlates, etiology, and clinical implications of disordered eating behaviors and attitudes in overweight youth.

SHAPE AND WEIGHT CONCERNS

The terms body dissatisfaction, shape and weight concerns, negative body image, and overvaluation of shape and weight (see **Table 1**) have been used interchangeably to describe one's appraisal of one's shape and weight. Although these constructs are clearly linked, they are indeed distinct in the degree to which they are indicative of additional pathology (23). Given Western society's emphasis on the "thin ideal," and the cultural stigma associated with overweight, some degree of body dissatisfaction or concern regarding one's shape and/or weight is relatively common in both normal-weight and overweight youth and adults (i.e., "normative discontent" (24,25)). Modest levels of body dissatisfaction may actually serve a functional role in motivating overweight youth to undertake healthier

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Table 1 Definitions of key terms

Domain	Term	Definition
Attitudes toward shape and weight	Body dissatisfaction	Negative appraisals of one's weight, overall shape, and/or certain aspects of one's shape
	Body image	Discrepancy between one's actual and ideal body shape
	Overvaluation of shape and weight Shape and weight concerns	The degree to which one's self-esteem is contingent upon one's shape and/or weight Worries or anxieties about shape and/or weight, including reactions to weight changes, feelings about one's current shape and/or weight, and the role of weight and/or shape in one's self evaluation
Weight control behaviors	Dieting	Cognitive or behavioral efforts designed to influence shape and/or weight, which may or may not result in actual changes in shape or weight
	Healthy weight control behaviors	Moderate and flexible attempts at restricting one's eating (e.g., increasing fruit and vegetable consumption, decreasing fat intake) or increasing one's level of physical activity
	Unhealthy or extreme weight control behaviors	Inappropriate or harmful behaviors designed to influence shape or weight, or counteract the effects of a binge, ranging on a continuum corresponding to degree of harm presented to one's health, from unhealthy (e.g., fasting, using cigarettes or diet pills to suppress appetite) to extreme (e.g., self-induced vomiting, laxative or diuretic abuse)
Binge eating	Loss of control	The feeling that one cannot control what or how much one is eating
	Unambiguously large amount of food	An amount of food that is definitely more than others would eat under similar circumstances

eating and physical activity behaviors (26). Conversely, the construct of “overvaluation of shape or weight,” which constitutes the core psychopathology of EDs, can be used to gauge clinically significant levels of preoccupation or distress regarding one's shape or weight in overweight youth. Body dissatisfaction is a fluctuating symptom that may be contingent upon recent changes in shape or weight, current eating patterns, or overall mood (e.g., experiencing shape- or weight-related distress when dressing, weighing oneself, or comparing one's body to others'), whereas overvaluation of shape or weight is a relatively stable construct (23). The related constructs of high shape and weight concerns have been identified as risk factors for EDs (27,28) and may be markers for other detrimental health behaviors (29–31), suggesting that both are worthy of clinical attention.

Shape and weight concerns and body dissatisfaction appear to be elevated in overweight children and adolescents relative to their non-overweight peers (e.g., see refs. (5,32–34)), and overweight girls endorse greater levels of body dissatisfaction than overweight boys. This sex difference has been observed across the weight spectrum (35–37) and may reflect sociocultural messages about the attractiveness of a thinner female body shape (38) or, alternatively, the greater likelihood of females verbalizing shape and weight concerns given that such concerns are generally considered to

belong in the female domain. Although few studies have examined ethnic differences in body dissatisfaction among overweight children, some evidence suggests that African-American children are less dissatisfied with their bodies relative to other racial/ethnic groups (39–41), perhaps due to differing cultural ideals for body size.

UNHEALTHY WEIGHT CONTROL BEHAVIORS

The term weight control behaviors describes a constellation of practices designed to influence one's shape or weight, which exist on a continuum ranging from healthy to unhealthy (see [Table 1](#)). For example, children may use the term “dieting” to refer to healthful attempts at weight loss, or extreme practices to control shape and weight (42). There may be further confusion when children report dieting, in terms of whether they are referring to cognitive efforts to restrict food intake, in the absence of objective attempts at restriction (e.g., wanting to restrict food intake without making overt behavioral attempts to do so); behavioral efforts to restrict food intake that are not successful; successful restriction of food intake; or restriction of food intake that results in actual weight loss (43). Although healthy levels of restraint are appropriate and desirable in overweight youth, unhealthy and extreme practices warrant clinical attention as they may be related to the development of an ED and

other adverse mental and physical health outcomes (22,44,45). Therefore, screening for specific weight control behaviors, rather than querying more generally about “dieting,” is indicated during clinician assessment.

Overweight adolescents may resort to the use of unhealthy or extreme weight control behaviors to a greater degree than their non-overweight peers (33,46–48). Simultaneously, overweight youth (48) and those endorsing unhealthy weight control behaviors (49) appear less likely to utilize healthy weight loss strategies, perhaps reflecting limited knowledge regarding weight control methods most likely to be efficacious, or desire for a rapid solution to their weight problems. Up to 79% of overweight youth report unhealthy weight control behaviors, while more modest but nevertheless significant proportions of overweight youth (up to 17%) report extreme weight control behaviors (45,46,48,50,51). Overweight girls appear to be at greater risk for endorsing unhealthy or extreme weight control practices than overweight boys (45,46), perhaps reflecting the greater shape and weight concerns seen among overweight girls. Although few studies have examined racial/ethnic differences specifically among overweight versus non-overweight children and adolescents, across the weight spectrum minority youth appear to be as or more likely to endorse unhealthy or extreme weight control behaviors as white youth (2,52).

BINGE EATING

Binge eating (see [Table 1](#)) may be difficult to assess in youth because of its heavy reliance on subjective experience (i.e., loss of control (LOC) overeating (53)) and retrospective recall (i.e., amount of food consumed). Children neither may not fully understand the concept of LOC nor may they comfortably admit to feeling “out of control” or “unable to stop” once having started eating. However, children often describe the experience of LOC as “numbing out” or “zoning out,” (54) and may relate to the analogy “like a ball rolling down a hill, going faster and faster” to refer to LOC eating episodes (5). Similarly, it may be difficult to determine whether an eating episode is unambiguously large because of children and adolescents’ growing nutritional needs, particularly during puberty (55). Youth may also use the term “binge eating” to describe consumption of certain types of food (e.g., “junk food”), or eating episodes characterized by specific emotional characteristics (e.g., eating that is preceded or followed by guilt or shame (42)). However, given evidence that binge eating episodes involving unambiguously large amounts of food and LOC have been prospectively linked to weight gain (17–19), and that LOC is associated with numerous negative psychosocial sequelae (5,56–59), it is important for health care providers to obtain descriptions of patients’ typical episodes to ascertain their clinical significance.

Although LOC eating in youth is clearly a marker for ED and general psychopathology (e.g., see refs. (5,50,57)), current controversy surrounds the issue of whether the consumption of an unambiguously large amount of food considerably improves the definition of binge eating in terms of providing predictive information about the presence of additional symptomatology, or severity or projected course of the eating disturbance. Preliminary studies have indicated that episode size is positively associated with anxiety, depressive symptoms, and ED cognitions in overweight, treatment-seeking samples (60,61), and to date, prospective evidence only supports a relationship between increases in weight and/or body fat and binge eating involving large amounts of food (17–19). However, two of these studies used self-report

measures rather than detailed interview methods to assess binge eating, thus it is unclear whether LOC eating episodes considered large by respondents, but not qualifying as unambiguously large according to interviewer standards, predict weight gain over time. Similar studies using more stringent assessment methods are needed in this area. In contrast to its ambiguous associations with prospective weight gain, research consistently demonstrates that LOC, with or without unambiguously large amounts of food, is a marker for pathology in children. Not only does the presence of LOC indicate additional ED and general psychopathology as noted above (5,50,56,57,62), but preliminary evidence suggests that eating episodes of children with and without LOC eating problems are qualitatively different in terms of their dietary composition (63,64) and affective correlates (54,65). Further supporting its importance, the adult literature shows that LOC is a stronger indicator of additional psychopathology than the amount of food consumed, and thus may have greater construct validity than the consumption of large amounts of food (66–68). Furthermore, the presence of LOC may be more crucial in labeling an episode “a binge” (e.g., see refs. (69,70)) and determining subsequent distress (71,72) than the amount of food consumed. Taken together, these data suggest that LOC eating is an important marker of psychopathology in children, while its role in the onset and maintenance of overweight remains in need of further study.

Overweight youth are significantly more likely than their non-overweight peers to report binge eating (5,16,33,46,73), and the likelihood of reporting this behavior appears to increase in proportion to the degree of overweight (48) and with age (73). Specifically, up to 30% of overweight children and adolescents (5,56,59,61,74) report episodes of LOC eating with or without consumption of a large amount of food. Regarding sex differences, binge eating shows an approximately equal sex distribution in childhood (56,57), although some data suggest that during adolescence girls may be more likely to endorse binge eating than boys (18,46). The literature is currently mixed regarding racial/ethnic differences in binge eating,

with two studies finding elevated rates of binge eating in Hispanic (75) and African-American boys (76) relative to white youth, while other studies have documented no such differences (77,78).

CORRELATES AND CONSEQUENCES

Disordered eating attitudes and behaviors are correlated with negative psychosocial sequelae (e.g., depressive symptoms, anxiety, low self-esteem, substance use (45,50,56,57,61,79,80)), some of which may be even greater in overweight youth exhibiting high shape and weight concerns (81). Further, shape and weight concerns, unhealthy weight control behaviors, and binge eating show clear associations with overweight (e.g., see refs. (5,46,48,57)). LOC eating and unhealthy weight control behaviors in youth have been linked cross-sectionally to increased weight and/or body fat (5,33,57). Similarly, binge eating and unhealthy weight control behaviors have been shown to predict increases in weight and/or body fat in prospective studies (17,18). These behaviors have also been identified as risk factors for obesity (19,44,82,83), perhaps indirectly contributing to the many negative medical consequences associated with overweight in youth (84). Furthermore, disordered eating attitudes and behaviors in youth appear to predict the onset of full-syndrome EDs (15,22,44,48), which in and of themselves are linked with numerous adverse physical health consequences (e.g., see ref. (85)). Given that overweight in childhood is a risk factor for EDs (20,21,86), and is associated with disordered eating attitudes and behaviors, which are also risk factors for EDs, it appears likely that overweight concurrent with disordered eating symptoms may compound the risk for an ED, as opposed to the presence of either of these variables individually. Future research is needed to test this hypothesis.

Disordered eating attitudes and behaviors in overweight youth may complicate weight loss treatment. Body-related concerns and teasing are frequent barriers to physical activity in overweight youth (87–89); the avoidance of physical activity in this population may further perpetuate overweight by leading to increased adiposity and subsequent increases in body dissatisfaction. As noted above, dieting and

the use of behaviors intended to decrease weight or prevent additional weight gain may paradoxically promote weight gain; indeed, data suggest that naturalistic weight reduction efforts in the form of self-initiated dieting and unhealthy or extreme weight control behaviors predict the onset of obesity (17,18,83). Only two studies have examined the impact of binge eating on pediatric weight loss treatment outcome, and neither found a specific effect attributable to LOC and/or binge eating (74,90). Despite these latter findings, binge eating, along with shape and weight concerns and pre-existing weight loss strategies, should be assessed in clinical practice to determine whether they should be addressed in weight loss treatment (e.g., in the form of psychoeducation, as treatment foci, as factors potentially limiting motivation/adherence).

ETIOLOGY

Several theories have emerged to explain the development of disordered eating behaviors and attitudes in the general population, yet none of these theories specifically takes into account the role of overweight in the onset of these problems (see Figure 1). Restraint theory (91) and the cognitive behavioral model of binge eating (92) propose that binge eating occurs as a result of perceived lapses in dietary restraint. Application of this model to overweight children would suggest that overweight predisposes youth to shape and weight concerns, consequently triggering dieting attempts, which then leads to binge eating. This is supported by studies finding that eating in the absence of hunger, a form of disinhibited eating, is strongly associated with overweight (93,94), and with externally imposed restriction of child food intake (e.g., by parents (94,95)). However, the model does not take into account overweight children with binge eating problems who do not diet (57,96), or the significant proportion of overweight children whose binge eating preceded their dieting attempts (56). This suggests the presence of additional variables predisposing some overweight children to binge eating.

Negative affect has been implicated for its role in the onset of disordered eating insofar as it often precedes and predicts

binge eating onset (19,97,98) and appears to distinguish between LOC and non-LOC eating (54,65). Several theories have posited that binge eating may serve to modulate negative affect by, for example, providing a distraction from external stressors (99) or by enabling a “trade-off,” whereby the aversive emotions preceding binge eating (e.g., anger) are replaced by less aversive emotions subsequent to binge eating (e.g., guilt (100)). The family environment may contribute to binge eating in this regard, as adverse familial experiences increase both negative affect (see ref. 101) and the risk for developing binge ED or bulimia nervosa (20,21). The nurturing properties of food, perhaps combined with parental modeling of binge eating (102), may prompt children who experience familial turmoil to binge eat as a coping strategy for their resulting emotional distress. Evidence suggests a modest association between depressive symptoms and overweight in children (32,103,104), potentially explaining overweight children’s relatively greater risk for disordered eating within this framework. On the other hand, overweight children may engage in disordered eating behaviors to cope with the elevated rates of teasing, social isolation, and generally compromised interpersonal functioning observed in that population (11,105–107).

Although the aforementioned theories attempt to pinpoint factors contributing to the occurrence of specific instances of disordered eating, more general information on risk factors for disordered eating and overweight is needed to inform prevention efforts. Risk factors for EDs in the general population have been identified (e.g., perfectionism, negative self-evaluation (15)); however, factors predicting the development of EDs specifically in overweight individuals remain unknown; areas of interest are impulsivity (108) and parental characteristics (109). Recently, research has focused on shared risk factors for disordered eating and obesity (110), including media exposure and weight-related teasing. Both of these variables may also promote weight and shape concerns, which theoretically underlie most cases of disordered eating. However, the majority of overweight children are exposed to the media and a large proportion experience weight-related teasing, yet not all develop shape and weight concerns at a threshold high enough to manifest in disordered eating behaviors. On the basis of research on contingencies of self-worth (111), it is proposed that individuals whose appearance determines their sense of self-worth may be most likely to internalize the thin ideal promoted in the media, and subsequently experience dissatisfaction with their own

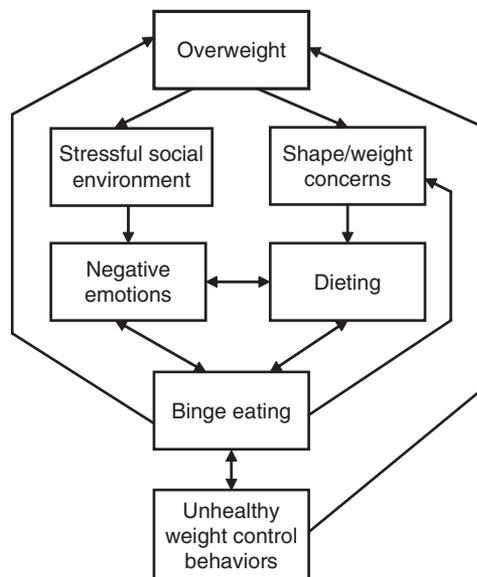


Figure 1 A developmental model of the relationship between overweight and disordered eating in childhood. In this model, overweight is the starting point for (as well as an outcome of) the initiation of the disordered eating cycle, such that overweight contributes to a stressful social environment or shape/weight concerns, which in turn lead to disordered eating behaviors.

bodies at an intensity level resulting in disordered eating. Alternatively, overweight youth with increased interpersonal sensitivity may be those most likely to experience distress about weight-related teasing and engage in disordered eating attitudes and behaviors as a consequence. Additional research is needed to explicate whether these or other unspecified variables compound the potential for some overweight youth to engage in disordered eating.

SCREENING METHODS FOR HEALTHCARE PROVIDERS

Clinicians may feel uncomfortable discussing disordered eating or weight control behaviors with their young overweight patients, due to fear of stigmatization or the risk of introducing harmful behaviors, as well as feelings that they lack the ability to impact patients' health positively (112,113). At present, there is no evidence that querying youth about unhealthy weight control methods increases their likelihood of engaging in such behaviors (114). Further, research suggests that overweight patients do indeed desire conversation with health care providers regarding diet and activity (115). Sound weight control education, including information on the negative consequences of disordered eating (e.g., medical sequelae, risk of further weight gain), may potentially

deter patients from resorting to extreme weight control behaviors that will ultimately prove unsuccessful in promoting weight loss (e.g., see ref. (19)). Thus, it is recommended that clinicians approach eating- and weight-related topics in a forthright and sensitive manner.

As mentioned previously, it is essential that health care providers inquire about specific disordered eating attitudes and behaviors to gauge whether they are likely to harm to one's current health or increase the risk for further weight gain and/or EDs (see **Table 2**). Clinicians should consider severity, frequency, and duration of the eating disturbance, as well as the number of symptoms present, when determining the need for additional intervention. Furthermore, as different patterns of onset may be related to differential course and/or severity levels of ED and general psychopathology (116,117), it is recommended that health care providers query patients with regard to the temporal sequence of symptom onset to facilitate treatment planning.

TREATMENT IMPLICATIONS

Separately, disordered eating and overweight pose risk for health complications in youth and when combined, this risk is potentially compounded. Accordingly, there is growing recognition that the

simultaneous treatment of overweight and disordered eating in youth is necessary and appropriate (118,119). Treatment and prevention of disordered eating and overweight are united by shared goals, including the development and maintenance of healthy eating patterns and behaviors, the promotion of regular physical activity, and the recognition of internal hunger and satiety cues (119,120). As these goals incorporate both individual and environmental factors, including family, peer, and media influences, it is optimal for treatment and prevention programs to recognize and target multiple risk factors (121). A specific emphasis should be placed on providing children with access to environments that promote acceptance of all body shapes, healthy eating choices, and opportunities for physical activity (119,121).

In light of evidence that dieting may increase the risk for developing an ED (15,122), concerns have been raised regarding the potential for treatment of overweight to increase risk for disordered eating in youth. In contrast, pediatric weight loss interventions have been shown to reduce ED symptoms significantly such as binge eating, body dissatisfaction, and shape and weight concerns (123–125). Elements of weight control strategies that may be responsible for decreasing ED symptomatology include a flexible dietary

Table 2 Recommended screening questions for health care providers

Domain	Questions
Shape and weight concerns	How do you feel about your shape and weight? Are they important to you in how you feel about yourself? When you think about your shape and weight, does it make you feel unhappy? Does being unhappy about your weight and shape keep you from doing things you like, or from feeling good about yourself? Does thinking about your shape and weight ever make it hard to pay attention to what you are doing? Do you ever feel guilty about eating because it might change your shape or weight? About how much time each day do you spend thinking about your shape and weight?
Weight control behaviors	Have you been doing anything to try to lose weight or get to a smaller size? What types of things? Examples include skipping meals, going long periods of time without eating (8 h or more), taking pills that make you not hungry or that make you lose weight, smoking cigarettes to keep from eating, taking pills that make you go to the bathroom, or making yourself sick after eating. Are these things you are actually doing, or things you are just thinking about doing or trying to do, even if you are not able to actually do them? How often do you do this?
Binge eating	Have you ever eaten a really big amount of food and felt like you just could not stop, like a car without brakes? Have you ever felt like you just could not stop eating, but the amount of food was not that big? Can you tell me what you ate at one of those times? When you eat like this, are you eating really fast, or eating when you are not hungry? What usually causes you to eat like this? For example, do you usually feel bad or upset about something before you start eating? Does it usually start with you eating something you think you should not eat? When you eat like this, do you usually make sure you are alone so that no one can see what you're eating? Do you feel upset about eating like this? How often and for how long have you been eating like this?

These queries, some of which can also be found in published measures, may assist clinicians who lack time for and/or access to full-length interviews or screening instruments in sensitively probing for disordered eating attitudes and behaviors in overweight youth. However, the queries as written have not been psychometrically validated, thus future research is needed to develop an empirically-based set of questions for clinicians' use. For a review of published screening measures, see ref. (130).

component consisting of moderate dietary restriction; gradual weight loss or stabilization; promotion of healthy eating patterns; and encouragement of family support and modeling of healthful eating and activity patterns. Similarly, concerns have been raised that ED prevention programs might introduce dangerous ideas about weight control strategies to youngsters. However, meta-analysis refutes this argument (126) and recent evidence indicates that prevention programs may decrease both disordered eating symptoms and obesity onset (127), perhaps through a reducing allegiance to the thin ideal. Finally, cognitive behavioral therapy is successful in reducing ED behaviors (92,128), and may also be appropriate for the treatment of overweight in children (123); thus, cognitive behavioral therapy may be an effective approach for treating co-occurring overweight and disordered eating in children. Pending additional research supporting a proximal relationship between negative affect and binge eating in childhood, interventions incorporating appropriate affect regulation strategies may also improve binge eating symptoms and, consequently, weight outcomes (129).

To allay safety concerns, it is recommended that treatment providers regularly monitor children's eating and activity patterns so that any problematic disordered eating behaviors may be addressed should they arise. In cases of subclinical ED behaviors, treatment providers should work with families to review strategies for regaining and maintaining flexible control overeating and activity, and offer consistent reminders about behavioral moderation, as overrestriction may indicate distorted attitudes about eating and may precipitate binge eating. If ED symptoms persist despite therapeutic intervention directed at these behaviors, weight loss treatment should cease and referrals to specialists trained in the treatment of EDs should be provided.

CONCLUSION

Disordered eating attitudes and behaviors among overweight youth are cause for concern, and are likely to be encountered in the clinical setting. Given the overlap of these syndromes and their shared association with adverse physical and

mental health sequelae, it is important for researchers and clinicians to work together to study, prevent, and treat these problems. Future research should focus on establishing etiological pathways for the development of these problems, with increased attention to previously underrepresented but nevertheless at-risk subgroups such as racial/ethnic minorities and boys. Prevention and treatment programs should utilize both cognitive behavioral and socioecological approaches, targeting both individual behaviors and contextual risk factors, and incorporate the shared goals of current interventions for disordered eating- and weight-related problems.

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DISCLOSURE

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