The Role of Impulsivity in the Effectiveness of Restrictive Eating Behaviors

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Abstract

Restrictive diets are a typical and well-recognized solution to the obesity pandemic. This literature review discusses six studies which assessed the effectiveness of restrictive eating behavior as it pertains to weight loss and the mediating role of impulsivity. The paper first looks at studies that examined the overall efficacy of restrictive eating. Results from the studies suggest that the rigidity aspect of the dieting process accounts for its overall ineffectiveness. The latter portion of the paper evaluates research which determined the effect of impulsivity on dieting. Results from the studies discussed indicate that, by lowering impulsivity levels, dieters might increase their likelihood of succeeding. Future research might therefore be aimed at assessing methods of improving impulse control in dieters.
Keywords: diet, impulsivity, weight loss, food restriction

The effectiveness of dieting as a weight management strategy is a widely discussed topic, both in everyday conversation and formal literature. Anecdotal evidence and empirical research have suggested that dieting is not the perfect solution for shedding unwanted pounds, as many people follow various dieting programs for extended periods of time with little or no success. The prevalence of obesity in the world has been deemed a major health problem, and therefore dieting, a potential solution to the problem, demands consideration. In an analysis for the Global Burdens of Disease Study, researchers demonstrated that the rates of being overweight or obese rose 27.5% in adults and 47.1% in children from 1980 to 2013.[1] The issue is certainly an urgent one, yet the study related that there have not been any national success stories reported in the last 33 years regarding the obesity pandemic. While it may seem that dieting is ineffective at combating obesity, research shows that there may be a specific factor that makes some people more successful in their diets than others. The following studies have examined the efficacy of rigid dieting in healthy weight management and the role of impulse control in contributing to dieting success.

In their 2013 study, Goldstein, Katterman, and Lowe noted the ineffectiveness of dieting and concluded that dieting does not lessen caloric intake from food.[2] By using self-report, the experimenters distinguished between participants dieting to lose weight, participants trying to avoid weight gain, and participants not dieting at all. They also evaluated the extent to which participants were using food restriction for the purpose of weight control and grouped subjects according to restraint status as unrestrained and restrained eaters. Perhaps as an oversight, the study does not specifically explain the difference between the two groups. In effect, the four groups studied were those dieting to lose weight, those dieting to avoid weight gain, restrained non-dieters, and unrestrained non-dieters. The researchers hypothesized that unrestrained non-dieters would have the highest caloric intake and current weight loss dieters would have the lowest caloric intake. They used 24-hour food records to evaluate food consumption. Results from the study did not confirm the researchers' hypothesis, as they found no significant difference between the four groups studied in terms of their total caloric intake. Interestingly, researchers did find that unrestrained non-dieters consumed more calories from drinks than those who were more conscious about their caloric intake. However, when caloric intake from food was analyzed separately from caloric intake from beverages, there was no significant difference between the groups. Thus, results from this study demonstrated that dieting does not reduce caloric consumption from food and might therefore be ineffective at combating obesity.[2]

Neumark-Sztainer et al. (2006) similarly demonstrated the inefficiency of restrictive eating behavior, namely its tendency to predict both weight gain and unhealthy eating patterns.[3] Their study examined adolescents who were dieting or engaging in other weight-controlling behaviors. It aimed to assess whether these behaviors contributed to weight gain, overweight status, disordered eating habits, and occurrences of eating disorders five years later. At the beginning of a five-year period, participants were asked how often they had dieted during the previous year, and dieters were distinguished from non-dieters based on their responses. Additionally, participants identified their weight-controlling behaviors. Healthy behaviors, such as eating fewer sweets and more fruits and vegetables, were distinguished from unhealthy behaviors, such as fasting and taking diet pills. Participants' body mass index (BMI) was also measured. When BMI was measured five years later, results indicated that dieting and weight-control behaviors did not lead to decreased BMI or overweight status. Instead, dieting and related behaviors were linked to weight gain, and five years later, dieters were almost twice as likely as non-dieters to be classified as overweight. The role of unhealthy weight-control behaviors in predicting overweight status was particularly evident. Dieting was also associated with an increased risk of developing eating disorders.[3]

The above studies both emphasized the ineffectiveness of dieting in healthy weight management. People who were dieting did not actually eat less than those who were not dieting.[2] Moreover, not only was dieting associated with weight gain, but it was found to induce eating disorder patterns as well.[3] Clearly, dieting does not produce a desired outcome for many people. What the studies left unexplained, however, is whether there is a particular property inherent in the dieting process which may contribute to its failure.

Through a study that looked at rigid and flexible control in dieting, Meule, Westenhofer, and Kubler provided insight as to why dieting

may fail in many circumstances.[4] Researchers expected dieting success to decrease with rigid control, or inflexibility in dieting, and increase with flexible control, or a more balanced approach to food consumption. Their procedure involved collecting data from participants via an online survey that measured rigid and flexible eating control strategies, food cravings, and perceived success in dieting. A long version of the flexible and rigid control scale was employed in the study to increase its reliability. Results confirmed that rigid control was a significant predictor of unsuccessful dieting, whereas flexible control was related to successful dieting. Additionally, only rigid control was associated with food cravings.[4]

Meule et al. (2011) highlighted the function of inflexibility in predicting an unwanted outcome for dieters.[4] Rigid control has indeed been found to inversely predict dieting success, but rigidity is often a central component of popular weight loss diets. However, despite the seemingly ineffective nature of such diets, certain characteristics of dieters may increase or decrease their likelihood of achieving weight goals through restrictive eating. According to Logan, Schachar, and Tannock, "people who are impulsive have trouble inhibiting action, whereas people who are not impulsive find it easier to do so."[5] Impulsive individuals might therefore experience more difficulty in following restrictive diets than individuals who are not impulsive.

Research has demonstrated how the role of subject impulsiveness mediates the effects of the dieting process. The stop-signal task, which requires participants to deliberately inhibit an anticipated response, is often used to measure impulsivity. Participants are instructed to respond as quickly as possible to a go task and to refrain from responding upon hearing an occasional stop signal. A participant's ability to inhibit his/her response after hearing the stop signal indicates good impulse control.[5]

Nederkoorn, Jansen, Mulkens, and Jansen predicted that children who were most impulsive would lose the least weight in a weight loss treatment program.[6] Impulsivity in 26 obese children was measured with the stop-signal task before a behavioral treatment designed to decrease overweight status was administered. Results demonstrated that impulsivity was directly correlated with the percentage at which a child was overweight: children who were more impulsive were more overweight. Additionally, children with higher levels of impulsivity lost less weight from the treatment than children with lower impulsivity. Children who were most overweight lost the least weight in the study, as losing weight seemed more difficult for them.[6]

Nederkoorn et al. elucidated an important connection between impulsivity and dieting success, but their study contained several limiting factors. One apparent factor which was lacking in the study was a description of the specific nature of the behavioral treatment administered to the obese children.[6] Because the level of restraint in dieting may play a role in its successfulness, it would be interesting to note whether the treatment involved highly restrictive eating rules, flexible rules, or a combination of both types of guidelines.[4] The study addressed the role of impulsivity in determining dieting success, but it failed to address whether an interaction effect exists between rigidity of treatment and the impulsivity of dieters. Additionally, because the study examined the effects of impulsivity on dieting in obese children, results may be limited in their generalizability to an adult population.[4]

In another study, Jansen et al. also hypothesized that dieting success is related to impulsivity.[7] They expected that, when tempted, eaters with high restraint who were more impulsive would eat more than high-restrained eaters who were less impulsive. They did not expect to see a difference in food intake between participants with low restraint who had high impulsivity and participants with low restraint who had low impulsivity. Food intake was the dependent variable in this study, and it was measured during a fake taste test. Experimenters measured food intake in participants on three different occasions after participants either ingested a preload consisting of two milkshakes, smelled high-caloric foods, or completed a questionnaire that was utilized as a time filler. Participants were told that the goal of the study was to examine how tasting and smelling affect reaction time and that they should eat as much of the food presented to them as they wanted. They were also instructed to complete a questionnaire about taste perception as well as the stop-signal task. The restraint scale was completed by participants instead of the stop-signal task only after their final taste test in order to prevent them from exhibiting more restraint in future trials. Results showed that an interaction between restraint and impulsivity is related to overeating. Restraint alone did not determine overeating, but participants who were high in restraint ate more if their impulsivity was also high.[7]

Koningsbruggen, Stroebe, and Aarts further confirmed that impulsiveness is linked to unsuccessful dieting in restrained eaters more than unrestrained eaters.[8] Researchers predicted that for unrestrained eaters, level of impulsiveness would either not affect dieting success or affect it to a lesser extent. They also predicted that dieting would be more difficult for restrained eaters who were more impulsive. Participants in the study completed questionnaires that assessed their trait impulsiveness, dietary restraint, and perceived dieting success. Results confirmed the research hypothesis, as experimenters found that higher impulsivity was connected to lower success in dieting for restrained eaters but not for unrestrained eaters.[8]

While Jansen et al. (2009) and Koningsbruggen et al. (2013) both examined the interaction between restraint and impulsivity levels in eating habits, the results of the former may be more reliable than the those of the latter.[7,8] Food intake in the first experiment was measured with a fake taste test, and thus there was an objective measure for the amount of consumption. However, the procedure for the second experiment involved a questionnaire, which evaluated perceived dieting success. The use of a questionnaire rather than an observable experiment to measure food consumption allowed for participant subjectivity, as the definition of dieting success for one participant might be different than the definition of success for another. Therefore, researchers from the first study could be more certain that their results were accurate and not based on the subjective experiences of participants.

Dieting can be an arduous process, and furthermore, following a rigid diet can cause people to overeat rather than eat less. Research has demonstrated that although strict dieting does not predict weight loss, people who have lower impulsivity levels can avoid the negative consequences associated with rigid eating behaviors. Hence, the role of impulsivity is central to the effectiveness of restrictive eating plans, as it can predict dieting success. These research findings lend themselves to practical application in terms of their ability to delineate ways to improve dieting strategies. In order to facilitate success in the dieting process, it would presumably be helpful if future studies were to assess methods of decreasing impulsivity levels in dieters. In this way, findings of past research could make a significant contribution to increasing the effectiveness of food restrictive behaviors.

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