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Food-Related Thinking Styles and Cultural Influences on Weight Gain

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Abstract: Obesity is a growing health epidemic with a constant rise in weight-related medical conditions, premature deaths and detrimental psychological outcomes, which places a burden on multiple aspects of health systems. Underlying psychological factors, especially cognitive mechanisms, still receive little attention in the literature, despite their link to high body weight. The present study aimed to identify food-related thoughts as predictors of weight gain. The sample mainly consisted of women who were recruited on social media platforms (N = 139). A regression analysis was performed with Food Thought Suppression, Preoccupation with Food, Body Mass Index, educational level, ethnicity and age as predictors of body weight. A one-way ANOVA was conducted to identify differences between weight categories. While the regression showed no significant link between body weight and Food Thought Suppression and Food Preoccupation, Afro-Caribbean ethnicity was associated with a higher weight status (r = .321). Additional meaningful correlations were found between food thought suppression and negative valence of food (r = .816), food thought frequency and negative valence of food (r = -.521), as well as for food thought frequency and food thought suppression (r = .587). The present findings support a link between dieting and negative thinking, which foster unhealthy eating patterns. Future research should increasingly define cultural variables for tailoring weight loss programmes in Afro-Caribbean communities, as this group has a particular need for weight management. Furthermore, positive reframing of negative food-related thoughts may offer a promising gateway to foster healthier eating patterns.

Keywords: Food, Eating, Behaviour, Weight Gain, Weight Change, Thinking Styles, Culture

1. Introduction

Over the past decade obesity has become one of society's major health challenges [1] and has surpassed smoking as the leading cause of preventable deaths in the US [2], leading to an increasing burden on the health system [3]. Although not as significant, statistics show similarly concerning trends in the UK, where after smoking, obesity was found to be the second leading cause of premature death [4]. As the obesity epidemic is becoming a more prominent issue, it is crucial to understand underlying processes involved in weight gain in order to tackle the causes [5]. Cognitive processes, particularly thinking styles and belief systems, have been identified as potential additional factors explaining weight differences. While the majority of literature explores cognitive processes and mechanisms explaining why certain individuals with an already high BMI successfully lose weight and others do not [6-8].

A scarcity of research has reported on cognitive factors involved in the development of becoming overweight as early risk factors for clinical weight status, which highlights the scope for clarification in future research [9]. The link between food thought suppression and adiposity stems from the strong association with problematic eating-related factors leading to weight gain, such as binge eating and food cravings [6]. Food-thought suppression derives from the Ironic Process Theory or the White Bear Problem, which refers to the psychological process whereby deliberate attempts to suppress certain thoughts make them more likely to surface [10] and has been identified in a variety of situations [6, 7, 9, 11].

High preoccupation with food is likely to contribute to the development and maintenance of being overweight [12].

There is robust evidence that it can predict a higher body weight, as people with high susceptibility for environmental food-related cues feel more inclined to overeat [13-14]. Contrastingly, food preoccupation has additionally been identified as a possible weight loss mechanism, as it can help reinforce strategies how to eat healthy and how to deal with food [8]. However, the effect of food preoccupation on body weight is still scarce, and it remains unclear whether it is more present among obese populations, or in those with a healthy weight.

Taking these insights into account, there is scope to explore weight-related differences in food-related cognitive processes, as research suggests that individuals at a healthy weight may engage in a different thinking style to those who already are overweight or obese [7]. While existing studies have explored cognitive patterns in obese individuals [7, 9, 11], scarce research has compared thinking styles across different weight categories in terms of their nature and intensity. Barnes, et al. [7] recommended focussing on individuals who are still at a healthy BMI, but display an increased risk of transitioning into the overweight category. This particular subsample could add valuable understanding by determining why people gain weight to an unhealthy extent in the first place, and to what extent initial beliefs and thoughts around eating may differ to thinking styles that occur post weight gain.

The present study aimed to clarify the following main hypotheses: 1. food thought suppression predicts a high BMI; 2. preoccupation with food predicts a high BMI; 3. people at risk of becoming overweight (BMI = 23- 24.99) differ significantly from overweight individuals (BMI ≥ 25) in the extent of suppressing food-related thoughts; 4. People at risk of becoming overweight (BMI = 23- 24.99) differ significantly from overweight individuals (BMI ≥ 25) in the extent of their preoccupation with food.

2. Method

2.1. Participants

The sample included 139 participants recruited via public online invitations on social media networks and forums. The most prevalent BMI category was a normal weight (n = 87). 16 people were underweight, and 36 fell into the overweight/obese category. The mean age for all participants was 26.87 years and the overall sample was nearly exclusively female (96.7%).

2.2. Measures

2.2.1. Food Thought Suppression Inventory (FSTI)

This 15-item inventory [7] is based on the Thought Suppression Inventory, a generic tool for assessing thought suppression [15] and was designed as a domain-specific measure of food-related thought suppression.

2.2.2. Food Preoccupation Questionnaire (FPQ)

The FPQ is a relatively new 26 item Likert-type questionnaire, which was designed to assess the frequency of thoughts about food, and whether these thoughts are characterised with positive, negative or neutral valence [12]. It consists of four scales, including frequency of thoughts about food, positive emotional valence of food, negative emotional valence of food and neutral emotional valence.

2.2.3. BMI

BMI was calculated from the Quetelet index from self-reported participants' height and weight (kg/m2)

2.2.4. Demographic Variables

Additional measured factors via self-report included in the analysis were age, educational level and ethnicity.

2.3. Procedures

Ethical approval was sought and granted from University Psychology Research Ethics Committee prior to the recruitment phase of the study. Participants were recruited via public online invitations on social media networks and forums. Open invites with a brief description of the study were posted with a web link, which directed participants to a Survey Monkey questionnaire, containing the FPQ, the FTSQ and a self-designed demographic questionnaire to assess age, weight, height, sex, educational level and ethnicity group. Consent to take part in the survey was sought via a consent form along with a briefing sheet on the start page of the survey. Upon completion of the survey, participants were thanked for participating, and debriefed.

2.4. Analysis

Linear multiple regression using Pearson's correlation was conducted to elicit correlatives of high body weight in order to generate the final predictor model. BMI served as the dependent variable, and all potential predictors for weight gain, including food-related thought constructs measured by the FPQ and the FTSI (frequency of thoughts, positive emotional valence, negative emotional valence, neutral emotional valence and thought suppression) as well as various demographic variables, including age, sex, ethnic origin and educational level, were defined as independent variables. The second half of the analysis consisted of a one-way ANOVA to determine how food-related thoughts differ in the weight gain process by comparing participants at risk of overweight (BMI = 23–24.99; a subcategory suggested by the WHO, 2015), with people from the overweight and obese category (BMI ≥25).

3. Results

3.1. Regression Model Formation

Correlations between the existing variables were assessed by performing multiple regression analysis. Correlations were classified as high when the coefficient r was ≥0.5, a moderate relationship was assumed with r between 0.3 and 0.5, and coefficients with a magnitude between 0.1 and 0.3 indicate a

low correlation (Andrews University, 2005). After running all analysis steps as previously described, a final regression model resulted, displaying the most prominent correlations, hence coefficients less than r = 0.3 were not included in the model (see figure 1). In the first step of the correlational analysis it was revealed that food thought suppression accounted for 21% variance in obesity, which was statistically significant (F (6.42) = 674.18, p < 05)). When the remaining variables, including the four factors of the FPQ, age, ethnicity and educational level, were entered in a second step, this resulted in further 22% of variance explained by this model, and this increase was statistically significant (R^2 Change = .147, F (1.89) = 7.58, p < 0.05). The improved model accounted for almost half of BMI differences (43%; Adjusted R^2 = 0.107), and was statistically significant (F (2.276) = 105, p = 0.01). The most significant predictor for this model was ethnicity based on the finding that an Afro-Caribbean ethnicity was associated with higher weight status (r = .31). Although of weaker magnitude, additional positive correlations were observed for people with higher education (r = .146) and positive food-related thoughts (r = .143). Negative linear relationships were observed for age (r = -.143), food thought suppression (r = -.212), negative food-related thoughts (r = -.223), food thought frequency (r = -.25), as well as having Caucasian (r = -.19) or mixed ethnicity (r = -.117).

For food thought suppression, relevant correlates included negative valence of food, food thought frequency and neutral valence of food, while positive thoughts had a weak negative association (r = -.24). In terms of demographic factors, weak negative relationships were found for BMI (r = -.212), all ethnic groups (r = -.263 – .103), as well as for education status, including level 1 (r = .205) and GSCE (r = 107). Age showed a weak negative correlation to food thought suppression (r = -.234), and a similar trend was observed for higher education (r = -.124).

The most significant correlation for preoccupation with food was observed between food thought suppression and negative valence (r = .816). In addition to this, high positive correlations were identified between the frequency and negative valence of food-related thoughts (r = .646), food thought suppression and frequency of food-related thoughts (r = .587), while a neutral attitude towards food was negatively associated with food thought frequency (r = -.521). In addition, several moderate predictors were identified: Thought frequency was inertly related to age (r = -.3.84) and having an Afro-Caribbean ethnicity (r = 411), which was also linked to neutral valence of food (r = -.30). Furthermore, having a high negative valence of food showed negative associations with age (r = -.353), as well as to a positive and neutral valence, (r = -.346; r = -.473). In the context of BMI, only weak links to three out of four scales from the FPQ were identified, revealing negative correlations for frequency of thoughts (r = -2.5.) and negative valence (r = -.223), while the link to positive valence, on the other hand, was positive (r = .143).

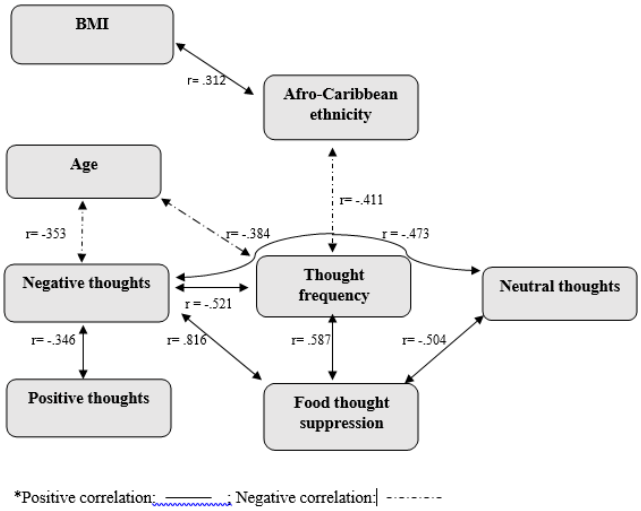

Figure 1. *Regression model including all predictor variables with moderate to high correlations*.*

3.2. Weight Differences in Food-Related Thinking Styles

A one-way ANOVA was performed to detect all existing significant differences between all BMI categories for all five food-related thinking patterns, which led to the formation of four groups, including (1) people with underweight (BMI ≤ 18.5), (2) healthy weight (18.5 < BMI ≤ 22.9), (3) a BMI at the upper healthy weight range (23 – 24.99), and (4) an overweight category (BMI ≥ 25). There were statistically significant group differences for food thought frequency (p < .05). A Tukey post hoc test revealed that the underweight group had significantly higher scores than the overweight group ($\bar{x}$ = 4.4 (SD = 0.69) vs. $\bar{x}$ = 3.55 (SD = 1.0); p <.05), and healthy weight individuals had significantly higher food thought frequency than overweight people ($\bar{x}$ = 4.1 (SD = 1.0) vs. $\bar{x}$ = 3.55 (SD = 1.0); p < .05). Further significant differences were detected for negative valence of food (p = .01) with evident group differences between the healthy weight and overweight sample ($\bar{x}$ = 3.29 (SD = 1.17) vs. $\bar{x}$ = 2.57 (SD = 1.0); p < .05), and between the underweight and overweight group. However, in the latter case the difference was marginally above the statistic cut-off value in order to be considered significant ($\bar{x}$ = 3.44 (SD = 1.23) vs. $\bar{x}$ = 2.57 (SD = 1.0); p < .05).

Group means across all weight categories suggested a tendency for food thought suppression and food thought frequency to increase with lower weight ($\bar{x}$ = 49.44 (SD = 20.78) and $\bar{x}$ = 4.4 (SD = 0.69) for underweight BMI vs. $\bar{x}$ = 39.56 (SD = 18.55) and 3.55 (SD = 1.0) for overweight BMI). The opposite applies to positive valence of food, where people in the higher BMI groups expressed higher scores than those in the lower weight categories overall, as results showed a small difference of 0.42 between the lowest and the highest BMI group mean based on scorings on a 5-point Likert scale. A similar observation can be made for neutral valence of food, which indicates a mean group difference of 0.32 between the lowest and highest BMI group. Based on these observations,

people in the group defined as being at risk of overweight (BMI = 23 – 24.99) overall tended to exhibit higher scores in food thought suppression, food thought frequency and negative valence of food compared to overweight people. On the other hand, participants with overweight reported a higher degree of positive and neutral valence of food than those with a lower BMI.

4. Discussion

Overall, Afro-Caribbean ethnicity was the strongest predictor for weight gain, and people of this racial group also tended to think about food more frequently and more positively than the other races. This adds further evidence to previous statistics highlighting racial disparities in the context of body weight, which found that in the UK, children of Black Caribbean origin are at greater risk of being overweight, while in the US, African American adults are 1.5 times more likely to be obese compared to white adults [16-17]. This is particularly concerning, considering that there is an increased risk of developing weight-related health complications, particularly diabetes, for people of African or Asian ethnic background living in the UK compared to the white population, even if their BMI is under 25 [18].

In contrast to the a priori assumptions, a low rather than a high BMI was linked to higher scores for the majority of thought constructs, particularly for food thought suppression, preoccupation with food and negative valence. The regression analysis found that people with a lower body weight generally tend to think about food more frequently, and these thoughts tend to be negative. Furthermore, both frequent and negative thinking have high correlations to food thought suppression, which indicates that people may try to limit the burden of these negative thoughts via suppression. This, however, does not appear to be effective, as the model indicates that their thoughts persist considering their high magnitude. This indicates that these thinking styles may assist as coping mechanisms in limiting food intake and consequently aid in maintaining a lower body weight. This observation corresponds a study, which determined food thought suppression as a possible mechanism for weight management [19]. However, other researchers have consistently linked this construct with a higher body weight, which contradicts to the present study results [7, 11, 20]. A possible explanation for this discrepancy is that a significant proportion of the sample may have been dieters, who knowingly are more preoccupied with food as a result of constant reinforcement of healthy eating strategies [8, 9]. Hence, their tendency to ruminate about their food choices in a complex way means that they may be less likely to following their natural hunger cues, but rather use external cues and norms as a guidance, which prohibits overeating and subsequent weight gain. On the other hand, people with overweight were less preoccupied with food and evaluated food more positively, which suggests that they feel more disinhibited to engage in overeating, as they are possibly less likely to ruminate or encounter distress prior to eating. Previous research has identified low education as a risk factor for adiposity [22], however this was not supported by the present findings. Interestingly, people with either a low or high educational level thought about food to a lesser degree in the present study. A potential explanation may be that living with a limited income often requires managing financial difficulties and other daily life stressors [23], which could require a stronger prioritisation of cost and availability of food, rather than ruminating about choices. Furthermore, the relationship between low literacy and detrimental health outcomes, including higher obesity rates and associated health conditions such as diabetes, has been established [24-25]. Indeed, the present study has identified a weak relationship between poor education and a higher body weight, which is consistent with this finding.

The present study suffers from some limitations that need to be considered when interpreting the outcomes. Including sex as a variable in the predictor model would have been of substantial value, as existing evidence highlights a considerable contribution of sex differences for explaining discrepancies in food-related thinking styles [7, 12, 26]. Future studies need to address and overcome the problem of balancing out the sex ratio in the recruitment process in the context of food-related topics, which tend to generate a stronger interest and therefore a higher response rate in women. Moreover, the study did not assess dieting status as part of the demographic survey, and previous research suggests that this variable is likely to affect weight outcomes [27]. Regarding the classification of weight categories, the Body Mass Index offers limited comparability regarding individual activity level, body composition and ethnicity [28]. This problem has been recognised prior to conducting the study, as well as in terms of interpreting outcomes, however due to lack of existing feasible and valid alternatives the BMI was deemed the only appropriate method to distinguish between underweight, healthy and overweight participants.

5. Conclusion

In conclusion, considering the increased risk of people with Afro-Caribbean ethnicity for obesity and weight-related considerations, it seems plausible to increasingly pay attention to ethnic peculiarities in the design and development of programmes for weight loss and obesity prevention. Interventions that have aimed at tailoring programmes to the Afro-Caribbean population are scarce and future research should consider identifying and defining cultural variables and linking them to relevant programme components and outcomes. A potential gateway to address the evident link between low body weight and high thought frequency may be replacing negative and possibly distressing food-related thoughts with positive ones. This could encourage a heightened awareness of more conscious food choices, while simultaneously fostering a more positive approach to eating.

References

[1] Morris, M. J., Beilharz, J. E., Maniam, J., Reichelt, A. C., & Westbrook, R. F. (2015). Why is obesity such a problem in the 21st century? The intersection of palatable food, cues and reward pathways, stress, and cognition. *Neuroscience & Biobehavioral Reviews*, *58*, 36-45.

[2] World Health Organisation. (2018). Obesity and Overweight. Retrieved on 11th April, 2019 from https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight.

[3] Selassie, M., & Sinha, A. C. (2011). The epidemiology and aetiology of obesity: a global challenge. *Best Practice & Research Clinical Anaesthesiology*, *25* (1), 1-9.

[4] NHS (2016). Obesity 'now a leading cause of death; especially in men'. Retrieved on 20th October, 2017, from https://www.nhs.uk/news/obesity/obesity-now-a-leading-cause-of-death-especially-in-men/.

[5] Blundell, J. E., Stubbs, R. J., Golding, C., Croden, F., Alam, R., Whybrow, S.,... & Lawton, C. L. (2005). Resistance and susceptibility to weight gain: individual variability in response to a high-fat diet. *Physiology & behavior*, *86* (5), 614-622.

[6] Byrne, S., Cooper, Z., & Fairburn, C. (2003). Weight maintenance and relapse in obesity: a qualitative study. *International journal of obesity*, *27* (8), 955-962.

[7] Barnes, R. D., Fisak Jr, B., & Tantleff-Dunn, S. (2010). Validation of the food thought suppression inventory. *Journal of Health Psychology*, *15* (3), 373-381.

[8] Elfhag, K., Rossner, S., Lindgren, T., Andersson, I., & Carlsson, A. M. (2004). Rorschach personality predictors of weight loss with behavior modification in obesity treatment. *Journal of personality assessment*, *83* (3), 293-305.

[9] Schyns, G., van den Akker, K., Roefs, A., Houben, K., Jansen, A. Exposure therapy vs lifestyle intervention to reduce food cue reactivity and binge eating in obesity: A pilot study. *Journal of Behavior Therapy and Experimental Psychiatry*, January 2019. ISSN 0005-7916.

[10] Byrne, S. M. (2002). Psychological aspects of weight maintenance and relapse in obesity. *Journal of psychosomatic research*, *53* (5), 1029-1036.

[11] Wenzlaff, R. M., & Wegner, D. M. (2000). Thought suppression. *Annual review of psychology*, *51* (1), 59-91.

[12] Barnes, R. D., Masheb, R. M., & Grilo, C. M. (2011). Food thought suppression: A matched comparison of obese individuals with and without binge eating disorder. *Eating behaviors*, *12* (4), 272-276.

[13] Tapper, K., & Pothos, E. M. (2010). Development and validation of a Food Preoccupation Questionnaire. *Eating behaviors*, *11* (1), 45-53.

[14] Bond, D. S., Phelan, S., Leahey, T. M., Hill, J. O., & Wing, R. R. (2009). Weight-loss maintenance in successful weight losers: surgical vs non-surgical methods. *International Journal of Obesity*, *33* (1), 173-180.

[15] Mela, D. J. (2011). Satiety. Let's put claims in the right context. Comment on 'Satiety. No way to slim'. *Appetite*, *57* (3), 774-777.

[16] Wegner, D. M., & Zanakos, S. (1994). Chronic thought suppression. *Journal of personality*, *62* (4), 615-640.

[17] Zilanawala, A., Davis-Kean, P., Nazroo, J., Sacker, A., Simonton, S., & Kelly, Y. (2015). Race/ethnic disparities in early childhood BMI, obesity and overweight in the United Kingdom and United States. *International journal of obesity (2005)*, *39* (3), 520.

[18] McKernan S, Ratcliffe C, Steuerle E, Zhang S. (2013). Less Than Equal: Racial Disparities in Wealth Accumulation. *Washington, D. C.: Urban Institute*, 2013.

[19] Nice, P. (2013). Assessing body mass index and waist circumference thresholds for intervening to prevent ill health and premature death among adults from black, Asian and other minority ethnic groups in the UK. *NICE July*, *46*.

[20] Reed, L. (2013). *Measuring confidence to resist overeating in Hispanic women in a community-based nutrition and exercise program*. Azusa Pacific University.

[21] Glaser, C. (2015). *Barriers to maintaining a healthy weight: Food preoccupation and obesity as measured by body mass index*. Alliant International University.

[22] Veugelers, P. J., & Fitzgerald, A. L. (2005). Prevalence of and risk factors for childhood overweight and obesity. *Canadian Medical Association Journal*, *173* (6), 607-613.

[23] Kim, P., Evans, G. W., Angstadt, M., Ho, S. S., Sripada, C. S., Swain, J. E. & Phan, K. L. (2013). Effects of childhood poverty and chronic stress on emotion regulatory brain function in adulthood. *Proceedings of the National Academy of Sciences*, *110* (46), 18442-18447.

[24] Falkner, N. H., Neumark‐Sztainer, D., Story, M., Jeffery, R. W., Beuhring, T., & Resnick, M. D. (2001). Social, educational, and psychological correlates of weight status in adolescents. *Obesity*, *9* (1), 32-42.

[25] DeWalt, D. A., Berkman, N. D., Sheridan, S., Lohr, K. N., & Pignone, M. P. (2004). Literacy and health outcomes. *Journal of general internal medicine*, *19* (12), 1228-1239.

[26] May, J., Andrade, J., Batey, H., Berry, L. M., & Kavanagh, D. J. (2010). Less food for thought. Impact of attentional instructions on intrusive thoughts about snack foods. *Appetite*, *55* (2), 279-287.

[27] Canetti, L., Bachar, E., & Berry, E. M. (2002). Food and emotion. *Behavioural processes*, *60* (2), 157-164.

[28] National Obesity Observatory. (2009). Body Mass Index as a Measure of Obesity. *http://www.noo.org.uk/uploads/doc789_40_noo_BMI.pdf*.