

The Power of Food: Is it Different between Men and Women?

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Abstract: Living in a food-abundant environment naturally emerges psychological effect. In this study we used the Power of Food Scale (PFS) to see how individual is influenced by foods in the food-abundant environments. Specifically, this study aims to see the difference between men and women regarding their PFS scores. This study involved 408 participants consisting of 134 men and 274 women. Using quantitative method and analysed with Independent Sample T-test, it is found that men and women are significantly different of PFS' score. Women tend to have a higher PFS score than men. It can be concluded that women are more susceptible in the environment full of palatable and unhealthy foods than men. Thus, for practice implication of women can be targeted first when it comes to healthy eating intervention.

Keywords: Eating behavior, hedonic hunger, power of foods

INTRODUCTION

In the past, hunger meant something about calorie fulfilment needs. Food is used as survival. Food is used to replace the energy that has been released. Hunger itself is often used as a way to understand various human motivations (King, 2011). Hunger, once grouped into basic human motivation for survival. Hunger motivates humans to maintain balance, or stable conditions. Furthermore it can be said that eating begins with hunger, and stops / disappears when full. However, with the presence of an abundant food environment, eating is not solely due to hunger, and hunger arises not only because of energy needs. Eating activities are solely for the purpose of pleasure.

Feeding activity is influenced by the value of food consumed. The higher the value, the higher the tendency to be consumed. According to Avena (2015), the value of food is determined by two factors, namely internal and external factors. Internal factors relate to what foods are attractive to someone and also brain function. External factors are related to things outside the individual such as advertising, social influence, and the presence of food. These two factors reinforce each other and have an impact on how valuable food is. The abundant food environment certainly adds to the value of food. In the abundant food environment, food is available everywhere, with an attractive and appetizing appearance, plus it is very easy to access, thus affecting the value of one's internal and external food.

This leads to a term called hedonic hunger. In homeostatic hunger, pleasure is greatly affected by the state of hunger and fullness. Therefore, eating with homeostatic hunger aims to maintain balance. Thus, pleasure will decrease when conditions change from hunger to satiety, or the attainment of equilibrium conditions. Whereas in hedonic hunger, a feeling of satiety plays a role in enjoying food. Pleasure can be the same level when full compared to when hungry (Lowe & Butryn, 2007).

Food-abundant environment are also called obesogenic environments, characterized by a large number of cheap, easily accessible, delicious, and energy-dense foods (Battle & Brownell, 1996). Furthermore Battle and Brownell (1996) noted that the obesity epidemic is caused by an environment that encourages people to overeat and less physical activity due to the various facilities created. Several studies were developed with the same background problems: an environment that allows access to delicious, cheap, high-energy foods easily, but on the other hand it puts people in a vulnerability to consumption beyond physical needs (Fisher & Birch, 2002; Birch, Fisher, & Davidson, 2003; Lowe & Butryn, 2007). All concluded that an abundant food environment has shifted eating activity is not merely for biological needs but also for pleasure. This is stated by Lowe and Butryn (2007) as a social phenomenon. The drive to eat without hunger, or eating in the absence of hunger has been widely studied in laboratories with experiments, for example those carried out by Fay, White, Finlayson, and King (2015). The results show that the presence of food has obscured hunger-satiety and caused eating in the absence of hunger. This may cause overeating which leads to obesity.

Thus, it is necessary to distinguish between homeostatic eating and hedonic eating, accordingly, Lowe and Butryn developed an instrument for hedonic eating named the Power of Foods Scale (PFS) (Lowe & Butryn, 2007; Butryn, et al, 2012). PFS is intentionally designed not to describe actual consumption of food because daily consumption may be mix from eating homeostatic and hedonic. PFS illustrates the vulnerability of individuals in a food-abundant environment. PFS is designed to see the trait, it has been tested for its reliability. PFS is also well tested for its correlation with various self-report related self-eating situations, such as the Dutch Eating Behavior Questionnaire (Strien, Frijters, Bergers, & Defares, 1986) and the Three Factors Eating Questionnaire (Stunkard & Messick, 1985).

The tendency of individuals consuming foods rather than for homeostatic hunger and sedentary life, result in unbalance energy intake. Individuals tend to consume more energy than they are expending. This result to obesity.

Obesity is an excess or abnormal fat that can interfere with health (WHO, 2011). According to the 2013 Indonesian Basic Health Research (Riskesdas, 2013), the prevalence of obesity in children aged 5-12 years is 8.8%. The prevalence of obesity in teenagers aged 13-15 years in Indonesia is 2.5%. The prevalence of obesity in teenagers aged 16-18 years was 1.6%. While the prevalence of obese adult males in 2013 was 19.7%,. The number is higher than in previous report (Riskesdas 2007). The prevalence of obesity in adult women, for instance, (> 18 years) was 32.9%, almost double from the prevalence in the previous report (13.9%). The prevalence number in male adult is lower than in female adult. It has to be addressed, since obesity is associated with death and susceptibility to disease (McGee, 2005; Stroebe, 2008).

This study was design to find whether there is difference between men and women regarding to their PFS score. Since there were differences in the obesity prevalence between two groups, and hedonic hunger was linked to obesity, we expected that there is difference between man and women in their hedonic hunger, women tend to have higher score than men.

METHOD

The study used quantitative approach, which is based on measuring variable to get a score. The score obtained is numeric value and then tested on statistical analysis for summary and interpretation (Gravetter & Forzano, 2012). The aim of the study is to compare the differences between two group: men and women, regarding to their score from the Power Of Foods Scale (PFS). Thus, the design was comparative research design.

Participant

N=408 participants in the study, all in their early adulthood stage (18-40 years). The sampling technique used in this study is a nonprobability sampling technique. Furthermore, the researcher used convenience sampling technique, where respondents are selected based on approach, availability, accessibility, or other methods determined by the researcher (Gravetter & Forzano, 2012). In the present sample, 134 participants are men (32.8%) and 274 participants are women (67.2%). The participant are mostly from DKI Jakarta (97.1%) and the area surrounding (Bogor Depok Tangerang Bekasi). All participants are Indonesian.

Measure

The measuring instrument used in this study is the The Power of Food Scale developed by Lowe and Butryn (2007) to measure the level of how one is influenced by the abundant-food environment, or their hedonic hunger. The instrument has been adapted by researcher, to adjust the items to be more appropriate to be used in Indonesia.

This measuring instrument is divided into three dimensions namely three levels of food proximity. Each dimension assesses the effect of the foods: 1) the perceived effect of food: availability of food, 2) the perceived effect of food: actual presence of food, and 3) the perceived effect of food: when tasted.

The instrument consisted of 21 items. The measurement using 5 points Likert scale, range from totally disagree to strongly disagree. The reliability of the instrument was tested using Alpha Cronbach. The α score was 0.912, therefore the instrument is very reliable.

Procedure

The participants complete the study by completing the survey via link sent to them. Participants filled the PFS scale section and also their demographic info. Participants also filled in the informed consent form as agreement their participation in this study. Only those who complete the form were included in this study.

Statistical Analysis

The research is quantitative study which aimed to explore the differences of hedonic hunger between men and women through the PSF score (Gravetter & Forzano, 2012). Data in this research was analysed using Independent Sample T-test.

RESULT

The result of the study can be showed as follow:

Table 1: PFS scores mean.

Men	65.63
Women	70.38

Table 1. show the mean of PFS score. The result found that women PFS score’s (70.38) are higher than the mean of men PFS score’s (65.63).

Table 2: Levene’s Test for Equality of Variance.

F	Sig.
.884	.348

Table 2. show the Levene’s test result. The Levene’s test for equality of variance is used to see the balance between two variance. In this study, the result showed that the significance in the Levene’s test is $p = 0.348$ or $> p = 0.05$. Thus, it is showed that the data is not violate the scores variance balance between two groups.

Table 3: The differences between men and women.

t	Sig. (2-tail)
-3.106	.002

Table 3. showed us the result from the comparison between two groups of men and women. The result showed us that the value of Sig. (2-tailed) is $p = 0.002$ or $< p = 0.005$. It showed us that there is significantly different in the power of foods score between men and women.

Sample effect in Independent Sample T-test was calculated using Eta Squared technique. The technique was used to measure how the participant number affect the result. The formula as follows:

$$\text{Eta squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)} \quad (1)$$

Independent Sample T-test was used to analyse the differences or to compare the score differences of two group: men and women. The result was no significant difference between two groups. Men (M=65.63, SD= 16.62) and Women (M=70.38, SD= 14,46) and $[t(406) = -3.106, p = 0.002]$. The Eta Square calculation was 0.0232, and based on Cohen (1998) classification, it can be concluded that the result was very small affected by the participant numbers.

DISCUSSION

This study concluded that there is a difference in hedonic hunger between men and women. Hedonic hunger was measured using adapted Power of Food Scale (PFS). Based on the mean value, women have a higher score than men. Although we didn’t correlate with the BMI, but the finding is in line with the report of the Indonesian Basic Health Research (Riskesmas) which found that women tend to have a higher obesity prevalence than men.

The result of this study has also supported previous research which found that women and men are different in their eating behaviour. Camilleri, et.al. (2014) for instance, found that women and men are different in emotional eating. Their finding suggested that for women, emotional eating with or without depression is associated with high-energy snack consumption (Camilleri, et al., 2014). On the other hands, emotional eating for men was only correlate with high-energy snack consumption if only there is a depressive symptoms. Thus, the result of this study support the conclusion from Camilleri’s research which concluded that it is needed to pay more attention to individuals psychological condition, especially in women, when

dealing with healthy eating interventions. Women seem to be more vulnerable when dealing with foods, moreover in the food-abundant environment.

The setting of this research was the area of DKI Jakarta and its surroundings, where DKI Jakarta is an ideal example of an environment with abundant-food, characterized by a large number of cheap, easily accessible, palatable, energy-dense foods (Battle & Brownell, 1996).

Stroebe (2008), argues that consumption of food in an environment with abundant food is indeed increasingly driven by pleasure compared to the need for calories. It triggers the phenomenon of eating in the absence of hunger, and then raises hedonic eating. The palatable foods availability are likely to prime the goal of eating enjoyment (Lowe & Butryn, 2007). Thus, foods abundant environment not only affect food intake, but also influence food-related cognition, affect, and motivation.

The use of PFS in this study to depict such phenomenon was appropriate, since PFS was designed to measure individual differences in appetitive responsiveness (Lowe & Butryn, 2007; Lowe et al, 2009). PFS has been proved as good measure to use since “it appears to reflect such a broad based susceptibility and minimizes burden on respondent,” (Lowe, et al., 2009). Based on Levitsky and Shen (2008), PFS can be used to predict food intake. However, PFS itself doesn't measure overeating or actual foods intake. In this study, it was only measured the PFS score among men and women in their adulthood, but it was not added any other measurements. Thus, the trait that can be measured using PFS interacts with exposure to food cues, it is highly suggested to combine PFS measurement with exposure to food cues (Lowe et.al, 2009). It will be a great approach in studying hedonic hunger, especially in Indonesia which the number of research about hedonic eating or psychological aspects in eating behaviour is very small.

This research has another limitation. The sampling technique used is non probability sampling, the external validity is weak. Therefore further research should use more probability sampling technique.

However, PFS is a useful tool in providing individuals appetitive controlled by food in obesogenic food environment (Capelleri, et al., 2009). Therefore, this research is very useful as an initial assessment of individuals' hedonic appetitive drives in food-abundant environments. Knowledge of this issue is important because PFS correlates with eating in the absence hunger or eating beyond physical needs (Feig, Piers, Kral, & Lowe, 2018) which is a contributor to obesity onset. Furthermore, future research can be addressed to see the relationships between PFS with other variables. Lowe & Butryn (2007) stated that foods abundant environment not only affect food intake, but also influence food-related cognition, affect, and motivation, thus, involving such variables will help a better understanding of psychological dynamic of food-abundant environment influence. Future research should also involve the measurement of Body Mass Index (BMI), binge eating, eating style, dietary habits, and cultural context to provide a more complete picture of this phenomenon. Thus, the intervention process that is needed will be carried out appropriately and effectively.

ACKNOWLEDGEMENTS

This research was supported by Bina Nusantara University through HIBAH BINUS 2018. We thank our students: Naliya, Tanyta, Radinda who helped in collecting the data.

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