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The relation between the ideal of beauty of Mexican VW-employees and healthy and unhealthy food consumption.

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1. Introduction

Throughout the last decades, overweight has become a growing problem in many parts of the world. The prevalence of overweight and obesity of people in Mexico older than 18 years is over 60% in women and 50% in men (Fernald, Gutierrez, Neufeld, Mietus-Snyder, Olaiz, Bertozzi et al., 2004), according to the classification of the Body Mass Index (BMI) that was established by the World Health Organization (WHO, 1948). Obesity has reached an epidemic degree in Mexico and, along with other factors, is responsible for preventable health problems, like diabetes mellitus, cardiovascular diseases, and hypertension (Hill, Catenacci & Wyatt, 2006), that are already very present within the Mexican population (Rivera, Barquera, Campirano, Campos, Safdie & Tovar, 2002), and that in turn raise the number of people sustaining premature death.

Monteiro, Conde, Lu & Popkin (2004) proved from the results of a meta-analysis among 30 countries, that in countries with a gross domestic product (GDP) per capita < 2500US$ the existence of a positive relation between an individual's social economic status (SES) and the prevalence of obesity. In Mexico, a middle-income country, the relationship is reversed and an increasing SES is associated with a decline in BMI (Barquera, Rivery, Espinosa- Montero, Safdi, Campirano & Monterrubio, 2003). On the other hand, some researches found out that negative behavioral factors in higher SES classes can mediate the relationship between SES and BMI in a negative manner, such as that higher income enhances the consumption of sweetened, carbonated beverages (Malik, Schulze & Hu, 2006) and alcohol drinks (Wannamethee, Field, Colditz & Rimm, 2004), which have been shown to be independently related to obesity.

It is hypothesized that the strong rural-to-urban shift in Mexico leads to the abandonment of traditional foods like beans, corn, greens, and root plants as they are associated with poverty. People in the city usually adapt to food that is associated with status (higher SES), such as meat and fast food (Leatherman & Goodman, 2005). The North American Foreign Trade Agreement (NAFTA) in 1994 accelerated this trend enormously, as it leads to an increased foreign direct investment (FDI) from the USA into the Mexican food and beverage market (Hawkes, 2006).

Overweight and obesity have many causes that include 1. genetic factors such as physiological appearance, temperament and gender, 2. environmental factors such as urbanization, and technological improvements that were followed by changing patterns of food validation and food availability, and 3. behavioral factors such as unhealthy lifestyles including unbalanced eating habits and insufficient physical activity. A fourth factor for overweight

might be the sociocultural disposition in a country such as tradition, the media, or the ideal of beauty. This ideal of beauty influences eating behavior and can be either conscious or unconscious. The study under consideration deals especially with the latter and makes use of the Prototype/Willingness Model (PWM) of decision making developed by Gibbons & Gerrard (1995), and the social comparison theory (Festinger, 1954). The PWM is based on the assumption that people hold distinct images about others who engage in a certain behavior, and that these prototypes are liked or disliked and have unconscious influences on own behavior with social comparison processes as a mediator. The present study tests if different constructs of the PWM are related to unhealthy food consumption, weight-loss dieting and exercise behavior, as we think that these behavioral components have explanatory character for BMI. The influence of this unconscious ideal of beauty on eating behavior is an important issue to investigate to make sensitive interventions to decrease overweight and obesity in Mexico.

1.1 Images about healthy and unhealthy food consumption

Overweight and obesity are strongly associated with diets that include large amounts of fats, animal-based foods and processed foodstuff (Chopra, Galbraith & Darnton-Hill, 2002). Healthy food consumption is seen as having regular mealtimes with sufficient fruit, vegetables, carbohydrates, and fibers. Unhealthy eating habits contain high fat intake, low fruit and vegetable intake, low fiber intake, skipping breakfast, and frequent snacking.

People hold different images about the behavior and the physical appearance of others and themselves. Body image is described by Thompson (1993) as:" [...] the picture of our own body, which we form in our mind, that is to say, the way in which the body appears to ourselves" (p.52). The body image of others is highly associated with certain behaviors and characteristics and leads to a steadily comparison process of ourselves and the given comparison target (Gerrard, Gibbons, Houlihan, Stock & Pomery, 2007).

Negative cognitive representations about overweight and obese people are well documented in the literature (Puhl & Brownell, 2001), at least in Westernized countries, where people place a great emphasis on their appearance. Individuals who are overweight or perceive themselves as being obese experience multiple forms of discrimination in areas such as employment, interpersonal relations, education, and healthcare (Brownell et al., 2005). Cross-sectional research (Saporta & Halpern, 2002; Maranto & Stenoien, 2000; Brunello & D´Hombres, 2007) made clear that overweight persons have strong disadvantages in hiring, wages, and job termination. Furthermore, research suggests that those types of discrimination make overweight and obese people vulnerable to bad psychological and physical well-being. Overweight

individuals consistently report increased stress levels, lower self-esteem, and lower self-confidence compared to people with a BMI < 25 (Brownell et al., 2005). Miller (1998) in turn underlines the unincisive development of social skills of overweight people, due to the mistreatment and discrimination they face from others. Puhl & Heuer (2009) investigated the stigma of overweight people and figured out that they were associated with negative attributes such as “lazy”, “bad”, “self-indulgent”, “unattractive”, and “lacking in self-control”. The attribute “fat” is most characteristic to unhealthy eating habits (Gerrits, Ridder, Wit & Kuijer, 2009), that is why we use at times the words “overweight” or “obese” in the present study to refer to unhealthy eaters. Greenleaf et al. (2004) found similar results in their study were respondents were asked to identify a body silhouette that best reflected various personality traits. Participants most frequently labeled the largest body silhouettes as “slow”, “unfriendly “, and “boring”.

In Western cultures, the typical healthy eater prototype is assigned with mostly positive traits like “good” and “motivated” (Puhl & Heuer, 2009), with women having extremer opinions about the prototypes than men (Gerrits, Rider, Wit & Kuijer, 2009). This might be because women are more concerned about their weight and body image (Connor, Johnson & Grogan, 2004) what may result in more positive ratings of healthy eater images and more negative ratings of unhealthy eater images by women compared to men. A lot of researchers emphasize these gender effects that occur in response to weight-based biases. Although Harris et al. (1982) assumed that women and men were equally affected by prejudice, it seems, due to cultural factors that are emphasized in magazines and television, that people place more importance on women´s physical attractivity, or the female body-as-object (Franzoi & Chang, 2000). Beginning in childhood, girls are taught that their body as an object of beauty is a significant factor of how others judge their overall value (James, 2000). In contrast to women´s tendency to focus on appearance in evaluating their bodies, men are more likely to consider fitness and power as relevant criterion of their physical selves (Agliata & Tantleff-Dunn, 2004; Klomsten, Skaalvik & Espnes, 2004), as others judge men more on their ability to move adeptly through physical space. This cultural emphasis on the male body-as-a-process explains the different focus of men and why their degree of muscular strength is related to positive body-esteem, social confidence, and general self-satisfaction (Furnham, Badmin & Sneade, 2002).

Negative attitudes to overweight people seem socially acceptable to express (Morrison & O´Connor, 1999) and are prejudices, also called *weight bias*. This process of forming judgments about others on the basis of their stature or certain attitudes one has about un/healthy

eating prototypes (Brownell, Puhl, Schwartz & Rudd, 2005) takes place very early in childhood. Children's' images e.g. of people who smoke and drink are quite reliable over time at age 7 (Andrews & Peterson, 2006), and by age 10-11, these images are predictive of drinking and smoking 4 or 5 years later (Dinh et al.,1995). Similar results show that children's image of marijuana users by age 9 influences their willingness to use drugs later on in life (Wills et al., 2008). According to Gerrard & Gibbons (1999, 2008) the origins of these images arise by reason of the social environment (family, peers, and friends) and the media (television, movies, magazines), as it is the case with the ideal of beauty of a society. Values are influenced by culture and religion, and as Marshall (1995) points out: "people like what they eat rather than eat what they like and food choice is molded by cultural representation which dictates what is eaten long before food reaches the mouth" (p.5).

The study under consideration wants to a) figure out if some positive and negative prototypes about un/healthy eating behaviors that were found in Western investigations exist in Mexico as well, because we did not find any source of affirmation in the literature, and b) if those images influence subsequent health related eating behavior and can explain high BMI.

1.2 The Social Comparison Theory

Leon Festinger introduced the social comparison theory in 1954, stating that individuals process social information by comparing themselves to others to discover similarities and differences with minimal cognitive effort (Krayer, Ingledew & Iphofen, 2007). Different comparison appraisals can be employed to deflect threats, learn from others or evaluate one´s own standing. Those appraisals are distinguished in three groups of objects: self-evaluation, self-improvement, and self-enhancement. Self-evaluation comparisons are used to obtain information about one´s own standing in relation to others in terms of attributes, skills and social expectations. Self-improvement comparisons are utilized to learn how to improve a particular characteristic, or for problem solving. In times of threat or uncertainty, self-enhancement comparisons protect self-esteem and self-worth and allow the individual to maintain positive views about the self (Thornton & Arrowood, 1966). Research in the area of eating behavior has mainly focused on the evaluative aspect of the social comparison theory, as this is the central dimension of body image (Stice & Bearman, 2001). The comparison of people with others depends strongly on the context of the situation and individual differences, but one central assumption of the social comparison theory is that people are more affected by comparisons with similar others than with dissimilar comparison targets. This can be explained by the higher meaningfulness of a similar other, because it is more informative than

comparisons with unequal others (Blanton, 2001). The more similar two persons are to each other, the more likely they will be able to use the information gained through social comparison, in better understanding themselves.

People not only are more affected by similar others, but they also tend to seek energetically for similar comparisons, even though it demands more time and cognitive effort than does selecting more readily available targets (Mussweiler & Rüter, 2003). In the study of Franzoi & Klaiber (2007) fifty U.S. Olympic speedscating team members, 50 professional models and 80 college students were chosen to further explore the social comparison theory. Most frequently, they chose same-sex individuals as comparison standard, while college students were more likely than Olympic athletes or professional models to compare themselves to people in the general population. Athletes were more likely than students or models to compare themselves to elite athletes, and models tended to be more likely than students or athletes to compare themselves to elite models. Furthermore, they investigated a stronger connection between social comparison and body image for women than for men, especially for appearance-related attributes.

The comparison process leads to different consequences, depending on personal characteristics and coping strategies. It might evoke a contrast effect or less frequently an assimilation effect (Buunk & Gibbons, 2007). An assimilation effect refers to when a comparer´s self-evaluation is displaced toward, rather than away from, the perceived evaluation of the comparison other (Blanton, 2001).

The social comparison process can lead to wrong perceptions of a risk (eating unhealthy), because an inappropriate other is utilized as a comparison target in assessing one´s own personal risk (Klein & Weinstein, 1997). This other may be an unrealistic stereotype whose behavior is more extreme than one´s own and thus is perceived as being quite different from the self (Weinstein, 1980). Consideration of such a target can lead people to conclude that their personal vulnerability is relatively low, due to the erroneous belief that their personal attributes or behaviors preclude them from experiencing similar negative consequences. This effect is called “optimistic bias” and is highly influenced by the perceived similarity to the comparison target. Research indicates that such an illusion of unique invulnerability is the mistaken belief that one's chances of experiencing a negative event are lower - or a positive event higher - than that of the others. Generally, there is a greater optimistic bias observable in perceived risk with consideration of a less specific, more disparate comparison other such as the “typical person” rather than a close friend.

According to Festinger, the perceived similarity to a favorable risk target influences behavior willingness and risky behavior. If the target is perceived to be different from the self, less comparison occurs and the image has less influence on behavior willingness or behavior. Altogether it can be said that the perceived similarity of the target determines the nature of the comparison and therefore the extent to which risk perception or image favorability is influential.

Another important aspect of the social comparison process is the self-relevance of the field of activity, as mentioned above by the study of Franzoi & Klaiber (2007). Generally, being outperformed by a comparison target induces more serious self-evaluation threats when the comparison context is high rather than low in self-relevance (Morf & Rhodewalt, 1993).

Finally, it should be mentioned that social comparison processes are heuristics that depend strongly on the individual's disposition toward a certain behavior. Those interested in reducing or stopping a certain behavior will look for evidence of distinction, whereas those who care about starting or increasing a behavior will look for evidence of similarity (Thorton, Gibbons & Gerrard, 2002).

1.3 The Prototype/Willingness Model

Whether it is preventing diabetes, cardiovascular diseases, and hypertension or avoiding a stigmatized fat body image or striving toward an idealized thinness, eating unhealthy may be characterized as a process of risk management. However, before people take steps to protect themselves, they first must believe that they are at risk. In Mexico, it would be helpful if more information was given to the population about healthy eating behavior and the consequences of being overweight to enhance subsequent precautionary eating habits. Perceptions of risk are an important component of actually all models of health behavior (e.g. Health Belief Model: Rosenstock, 1990; Protection Motivation Theory: Maddux & Rogers, 1983; Precaution Adaption Process: Weinstein, 1988).

Dual-processing models of cognition maintain that two qualitatively different pathways of information processing operate in decision making, one that is based on heuristics and affect, and one that is based more on analytic and systematic reasoning (Sloman, 1996; Boyer, 2006; Evans, 1984; Stanovich, 2004). Epstein´s cognitive-experiential self theory (CEST; 1973, 1994) describes the analytic system as effortful, logical and deliberative, and the experiential system as impulsive, intuitive, and image-based. The former acts consciously and is based on conventional rules of logic, the latter operates outside of one´s own awareness and makes use of fairly complex constructs like prototypes that have been created in the past by experience. In

the past, it was believed that risk behavior was the outcome of a rational, deliberate decision making as a lot of studies have demonstrated a good predictability with models only including conscious constructs, like the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behavior (Ajzen, 1985, 1991). In these approaches to decision making, attitudes proceed to behavior through a single proximal antecedent; the intention to engage in a particular behavior. Intentions are generally defined as "goal states" (Ajzen, 1999) that are formulated after some deliberation or reasoning. Two meta-analyses of the theory of planned behavior demonstrated that behavioral intentions can explain 30-40 % of the variance in a particular health behavior (Armitage & Connor, 2001; Van den Putte, 1993), but often a discrepancy shows up between the intention of somebody and the actual behavior (Gerrard, Gibbons & Gano, 2003; Zabin, 1994). This takes place especially in risk situations, therefore we choose for the prototype willingness model (Gibbons & Gerrard, 1995), as this model uses behavioral willingness to unhealthy behavior - an openness to engage toward risk - as the main construct to predict unhealthy eating. It is an improvement to other health behavior theories, as it focuses not only on reasoned processes in decision making, but can explain unintentional, volitional risk behavior.

The Prototype/Willingness Model is related to other dual-processing models in that it is based on the assumption that there are two types of decision making involved in health behavior (Gibbons, Gerrard & Lane, 2003). These two types are reflected in the above mentioned two hypothesized paths. The reasoned path includes many of the concepts of the theories of reasoned action and planned behavior, which involves more analytic processing, and the social reaction path is image-based and involves more heuristic processing. The social reaction path explains people´s unintended behavior, specifically their unplanned decisions to start, continue or stop behaviors that can put their health at risk, like unhealthy food consumption. This path includes prototypes and behavioral willingness, which is influenced by the two independent processes of risk perception and prototype perception. The study under consideration only deals with those unconscious processes in decision making and does not make use of the rational constructs people have in mind.

Prototype perception is seen as a cognitive representation or social image of the type of person who engages in a specific behavior. Those health related behaviors and prototypes involve two dimensions; it can be risky (behavioral performance damages health), or healthy (behavioral performance promotes or protect health). Prototypes can therefore refer to actors (type of person who performs the respective behavior), or abstainers (type of person who does not perform the respective behavior). Combining these two dimensions results in four

prototype categories that might have motivational impact on people's health related behaviors: risky behavior actor prototype, risky behavior abstainer prototype, healthy behavior actor prototype, and healthy behavior abstainer prototype (Rivis, Sheeran, & Armitage, 2006). Blanton et al. found out that people are more motivated by a desire to avoid association with risky-behavior-actor images than by a desire to gain association with healthy-behavior-actor images. Because actor and abstainer prototypes reveal identical predictive validity in relation to health related intentions, we choose just for two actor prototypes in the present study. One risky-behavior-actor prototype (eating unhealthy) and one healthy-behavior-actor prototype (eating healthy). We think that the risky-behavior-actor prototype will have stronger influence on behavior than the healthy-behavior-actor prototype, as there is evidence that people avoid being unhealthy instead of striving to be healthy. Of course, the abstainer properties of the two prototypes also have influence on risk/health behavior.

The prototypes have effects upon the behavioral willingness of people and could have a facilitating as well as an inhibitory role in relation to health-risk behavior. Blanton et al. (2001) suggests that risk images (eating unhealthy) are more motivating than are non-risk images (eating healthy), but there is also evidence that non-risk images can be goal states and therefore poses motivational impact (Gerrard et al., 2002). Avoiding unhealthy eating may be therefore of greater relevance for preventing weight gain than promoting healthy eating.

The Prototype/ willingness model suggest that people hold prototypes or images of the type of person who engages in a particular behavior and that their attitudes and propensity toward the behavior reflect the favorability of this prototype. The more favorable the image, the more willing is the individual to engage in the same behavior and to accept the social consequences associated with this behavior, including being seen by others as someone who engages in the behavior. The consideration of a stereotypical other is fundamental in the evaluation and comparison process of a person.

Altogether, one can say that risk behavior declines as the favorability of a risk- image dwindle down, whereas risk behavior increases as the evaluation of a risky prototype becomes more positive. Consistent with the assumed role of social comparison in the prototype/willingness relationship, favorability of risk images was related to subsequent risk behavior more strongly for those who engaged frequently in social comparison (Gibbons & Gerrard, 1995). Two other constructs that are highly dependent on the social comparison process are the attractivity of the prototype and the perceived similarity of the target with the prototype. High perceived similarity to a favorable risk target supports behavioral willingness and risky behavior, if the target is perceived to be different from the self, then less comparison

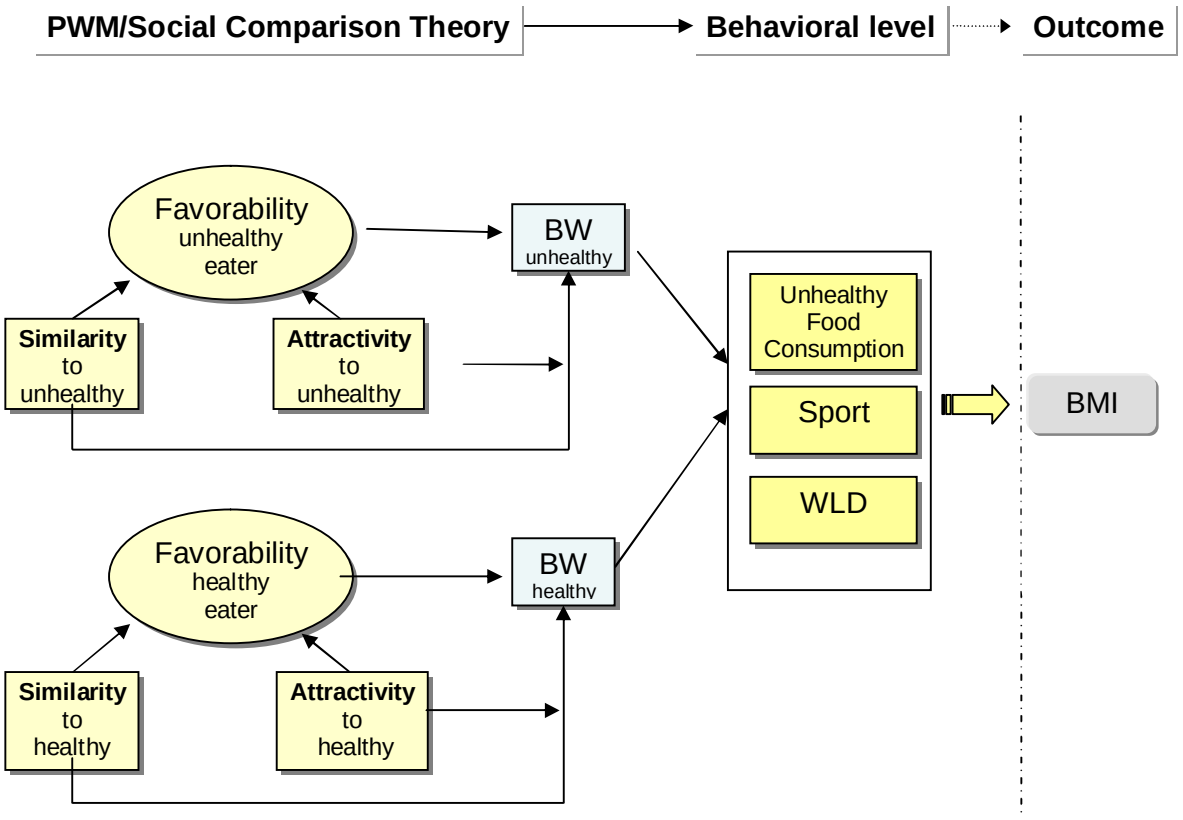
occurs (Festinger 1954) and the image has less influence on behavioral willingness or behavior (Gibbons & Gerrard, 1997).

The theory of reasoned action /planned behavior (Ajzen and Fishbein, 1975 & 1985) involves a concept, called subjective norm. This is seen as a combination of perceived expectations from relevant others or groups along with intentions to comply with these expectations. In other words, "the person's perception that most people who are important to him or her think he should or should not perform the behavior in question" (Ajzen & Fishbein, 1975). The PWM operates this subjective norm somewhat different. It is not seen as a believe in the opinion of others about engaging or not engaging in the behavior, instead the relevant social influence is the awareness that engaging in certain eating habits will result in others seeing you as un/healthy, and the acceptability of the social consequences of being seen as such. It is somewhat more indirect, and does not place the center of gravity on social pressure. This social influence is thus important in determining behavioral willingness (BW).

1.4 Overview and Hypothesis

According to the foregoing discussion of theories, research results, and literature review, we developed the subsequent graphical representation as a guideline for the present study.

Figure 1: Graphical representation of our study model.



In this model, gender, age, and educational achievement act as different mediator variables.

According to the foregoing discussion of theories, research results, and literature review we formulated the following hypotheses for the present study:

- H_1: Mexicans will hold distinct images of typical un/healthy eaters and will ascribe fewer positive traits and more negative traits to the unhealthy prototype.
- H_2: The evaluation of the two prototypes will be determined by the gender and the age of the participant.
- H_3: Women are stronger influenced by the unhealthy prototype than men.

- H_4: The higher the SES of respondents, the lower their BMI.
- H_5: The Evaluation of the two prototypes will have explanatory power of unhealthy food consumption, the WLD- behavior, and the exercise comportment of respondents.
- H_6: The evaluation (favorability, attractivity, and similarity) of the two prototypes will be related to health protective as well as health risk behavioral willingness (BW).
- H_7: The unhealthy prototype will have stronger influence on behavior than the healthy prototype.
- H_8: A high score on the unhealthy food consumption frequency scale leads to higher BMI.
- H_9: A high score on exercise behavior leads to a lower BMI.
- H_{10}: WLD shows a negative relation with BMI.

2. Method

2.1 Participants

The study took place in May 2009 in Puebla, Mexico. A total of 251 Volkswagen Company employees participated in this study, with the inclusion criterion of being a Mexican citizen. The study was highly uneven concerning gender, with 188 participants being men and 57 women (6 missing). Participants ranged in age from 21 to 62 years (M = 37.21 years, SD = 8.80 years). The participants' BMIs, calculated based on their self-reported height and weight, ranged from 15.04 to 36.66 (M = 25.44, SD = 3.21). 10.8 % of the respondents had finished their general qualification for university entrance, 72.9 % achieved a Bachelor-degree in some area, and 12.7% got a certificate as a Master. Only two participants had a lower qualification, and nobody received a Ph.D.

2.2. Measures

2.2.1 Prototype Perception

The questionnaire was sent in April 2009 via email as a Microsoft Word document to all employees of the Volkswagen de Mexico company, who were registered as having an own email account. They were asked to mark their answers by dint of a color or another font size, and were informed over the fact that there participation would be anonymous. They were requested to send the questionnaire about, amongst other items, their perceptions of healthy and

unhealthy eaters, back as soon as possible. We used all questionnaires that had been fully completed and sent back before May 29.

Participants' image of a typical un/healthy prototype was assessed presenting a written representation (prototype) of person who engages in un/healthy eating behavior. Although these images have visual elements, they are primarily characteristical and therefore the image is a typology rather than a description of the physical appearance of the type of person described. Assessment of the prototypes involved asking participants to consider the two actor images: "a person of your age that regularly eats fat food and does not eat much healthy food, like vegetables and fruits" and "a person of your age that avoids fat food and regularly eats healthy food, like vegetables and fruits" respectively. Then the participants were asked to rate those prototypes on a list of adjective descriptors derived from earlier studies (Blanton et al., 2001; Gibbons, Gerrard & Boney McCoy, 1995). These 20 adjectives were as follows: smart, confused, popular, immature, cool, self-confident, independent, careless, unattractive, dull, considerate, self-centered, wise, nicely dressed, friendly, fat, stupid, anxious, thoughtful, and superficial. All participants could indicate their image of an un/healthy eater on a 5-point Likert scale ranging from "does not fit at all" (1) to "fits very well" (5).

In order to make a polarization of the attributes and to figure out if they discriminate adequate between positive and negative ones, discrepancy scores for each attribute were calculated (fat stereotype attribute – thin stereotype attribute) with scores > 0 indicating a greater likelihood of ascribing the attribute to unhealthy people in contrast to healthy people and < 0 indicating the reverse. Because the attributes "cool", "friendly", and "thoughtful" did not differentiate significantly between the two stereotypes they were excluded from subsequent analysis (see Table 1).

Due to some ambivalent attributes in the questionnaire such as "considerate", and the possible different moral concept about "good and bad" of Mexicans, we decided to use factor analysis in order to examine which attributes were seen as positive or negative. Factor analysis offered 9 negative attributes in the unhealthy prototype (confused, immature, careless, unattractive, dull, self-centered, fat, stupid, and superficial) and 10 items in the healthy prototype (confused, immature, careless, unattractive, dull, self-centered, fat, stupid, anxious, and superficial). We recoded all negative attributes in both questionnaires, so the two variables remain actually the same, but can be interpreted in the same direction. After recoding, the internal consistency of the 20 items was pretty good for ratings of the unhealthy eater prototype (Cronbach's $\alpha = .65$), and good for the healthy prototype (Cronbach's $\alpha = .84$). Due to a very low corrected item-total correlation, three more attributes had to be removed, because those

attributes lacked descriptive character for the prototypes. This was applicable for the attribute "fat" (.09) in the unhealthy prototype questionnaire, and the attributes "popular" and "self-centered" (.13 and .12, respectively) in the healthy eater image survey. A fat mean stereotype score and a thin mean stereotype score was calculated then by adding all attributes together and dividing it through 16 and 15 respectively. The higher this so called favorability-score, the more positive the evaluation of the prototype. Alpha coefficients for the unhealthy and healthy eater prototype remained adequate when these six items were removed (α = .59 and α = .85, respectively).

The participants were then requested to indicate how appealing they found each prototype: "Can you indicate how attractive such a type of person is to you?" and could answer on a 5-point Likert scale ranging from "1" (not attractive at all) to "5" (very attractive)**.**

Thereafter self-prototype similarity was assessed by asking participants how similar they thought they were to the two prototypes respectively. Answers were possible again on a 5-point Likert scale ranging from 1 "not at all" to 5 "completely".

2.2.2. Assessment of Behavioral Willingness

Expressing behavioral willingness (BW) is the confession that, under certain circumstances, one might engage in risk/protective behavior that was not intended or sought previously. The differences to the assessment of intentions (do you intend to eat healthy/unhealthy?) is the questions shift of the focus of attention from the self to the situation (Federoff & Harvey, 1976; Gibbons, Gerrard, Blanton,et al., 1998) and the conditional character of the question. The less conditional vulnerability an individual feels, the more willing he/she will be to engage in risk behavior. Because willingness is a response to a risk-conducive circumstance, respondents were first given the description of the following hypothetical scenario: "Imagine, you are eating with a friend in a restaurant and they only sell fat food, like French fries, chalupas, and gorditas" (traditional unhealthy food in Mexico). "How probable is it that in this situation:

a) "You enjoy the meal with your friend and eat fat food with pleasure", and
b) "You do not want to eat here and prefer to look for a restaurant where they sell healthy food like vegetables".

Then respondents were asked to answer both questions on a five-point Likert scale that ranges from "1" not at all probable to "5" very probable. The same scenario was described with a healthy restaurant and reciprocal answer options.

Because we assessed behavioral willingness by these two questions in a given (risk/protective) situation, with one being contrary to the other, the second declaration (b) was

reversely coded, so that the calculated total score of behavioral willingness could be interpreted in the same direction, no matter if it concerned the healthy or unhealthy prototype. One BW to engage in unhealthy eating behavior (Cronbach's $\alpha = .73$), and one BW to engage in healthy eating behavior (Cronbach's $\alpha = .71$).

Behavioral willingness has been shown to predict risk behavior independent of intention, even though they are correlated (r typically ranging from 0.25 to 0.65, depending on the risk behavior, Gibbons et al., 2003; Gibbons, Gerrard, Blanton et al., 1998). One advantage in using BW and not intention as a measure for risk perception and own vulnerability is the fact that answers high in "social desirability" are lower, compared to measures of intentions (Gibbons, Gerrard, Blanton et al., 1998). The second advantage is the conditional frame of the hypothetical scenario that makes respondents less vulnerable to the in section 1.2 explained "optimistic bias".

2.2.3. Weight-loss Dieting

The voluntary change in eating habits of participants, performed with the specific intention of loosing weight or being healthy, was measured by asking how often the person engaged in a special diet during the last two years. Five responses were possible: "never", "1-3 times", "4-7 times", "8-10 times", and "every time". To simplify matters and to facilitate our statistical analyses we combined the WLD status into three groups: "never dieters", "sometimes dieters", and "all the time dieters". Thus, "1-3 times", "4-7 times", and "8-10 times" was collapsed into one new indicator.

2.2.4. Body Mass Index

Participants' BMI was calculated using their self-reported height and weight obtained by the first personal questions in the survey. Previous research indicated that self-reported height and weight tends to vary by only 1-3.5% from people's actual height and weight (Bowman & DeLucia, 1992).

According to the WHO, a BMI of less than 18.5 is categorized as underweight and may indicate malnutrition, an eating disorder, or other health problems, while a BMI higher than 25 is considered as overweight and above 30 is labeled as obesity (adipositas). Though it does not actually measure the percentage of body fat, it is used to estimate a healthy body weight based on how tall a person is, although factors such as muscularity affect the BMI as well. Body mass index is defined as the individual's body weight divided by the square of their height. The participants´ BMIs in this study ranged from 15.04 to 36.66 ($M = 25.44$, $SD = 3.21$).

2.2.5. Unhealthy Food Consumption Frequency Questionnaire

Participants completed a food frequency questionnaire (15 indicator variables) regarding typical unhealthy traditional Mexican food like tortillas, churros, or quesadillas. The choice of food was made after interviewing Mexican citizens and asking them what they considered as typical unhealthy food in Mexico. A high inter-correlation of a given product was the inclusion criteria by developing the scale.

The introductory question, "How often do you eat the following foods?" asked participants about the frequency of their usual consumption of each food/ snack separately. There were 4 answer options: "1=never", "2=sometimes", "3=frequently", and "4=daily". Scores for all individuals were obtained by summing their responses to all 15 items. The minimum total score was 16, the maximum total score 43 with a mean of 30.56 (SD = 4.24).

The higher the score, the higher is the consumption of unhealthy food. This score is expected to be related with the un/healthy prototype they have in mind, and to correlate positively with the participants' BMI.

2.2.6. Exercise behavior

In order to get an idea about participants' physical activity behavior, we formulated the statement "at least once per week I engage in exercise". Answers could be given on a five-point-Likert scale ranging from 1 (absolutely not agree) to 5 (absolutely agree).

2.2.7. Procedure

On the first page of the questionnaire, participants were given a detailed description of what a prototype is (Gibbons et al., 1995):

> *"The question on the next pages are about the image that you have on certain people. We want to know your ideas about these people in the same as you have ideas about film stars or grandmothers. Everybody has a specific image about these persons. A film star is often depicted as beautiful or rich. A typical grandmother is depicted as sweet and old. This does not mean that all film stars or grandmothers are the same, but that these persons have some things in common."*

Participants were asked to write down their personal dates, including their age, height, weight, gender, and highest achieved education degree. Following this, they were told to

consider the prototypical unhealthy eater and the prototypical healthy eater and were requested to mark the accordance to 20 attributes for each prototype. Thereafter they had to indicate how attractive they found each prototype, and how similar they perceived themselves to be to each of them. The presentation of the two prototypes was counterbalanced to prevent order effects. The BW to engage in un/healthy eating behavior was then assessed by describing an imaginative future situation and asking the participants how they would react. This was finally followed by the unhealthy food frequency questionnaire and the demand of the dieting and exercise status of the participant.

The ethical requirements were respected in the present study, and all VWM-employees could participate voluntarily. The questionnaire was written in Spanish to ensure that everyone understands clearly, what it is all about. In annex A you can find the questionnaire of our study as it was sent to the participants.

3. Results

3.1 Sample characteristics and gender differences

Prototype perception

The unhealthy eater was mostly negative evaluated whilst the most relevant descriptors of the healthy eater were predominantly positive. Table 1 demonstrates the ascription of the different attributes to either the healthy or the unhealthy prototype. In general, the unhealthy prototype was seen as less favorable ($M = 2.77$, $SD = .40$) than the healthy one ($M = 3.67$, $SD = .60$). The literature shows that females are more concerned about their weight and body image (e.g., Conner, Johnson & Grogan, 2004) and this may result in more positive ratings of healthy eater images and more negative ratings of unhealthy eater images by women compared to men. In this study, significant gender differences were found in the evaluation of the unhealthy eater prototype ($t = 2.19$, $df = 214$, $p < .05$). An independent samples t-test showed that female participants had a slightly more negative image of the unhealthy eater ($M = 2.66$, $SD = .50$) than males ($M = 2.80$, $SD = .37$). No gender differences were found in the favorability of the healthy prototype. Respondents' favorability ratings of eater images were not associated with their self-reported BMI, regardless whether it concerned male or female participants.

The attractivity of the healthy prototype ($M = 3.69$, $SD = .83$) was rated higher than the attractivity of the unhealthy prototype ($M = 2.35$, $SD = .95$) whilst there were no differences in gender ratings concerning the healthy prototype ($t = -.18$, $df = 216$, $p = .86$). Regarding the

unhealthy prototype women find it significantly less attractive than their male counterparts (t = 2.34, df = 218, p < .05).

The similarity to the unhealthy prototype was according to participants self-evaluation at an average lower (M = 2.35, SD = 1.03) than the similarity to the healthy eater prototype (M = 3.41, SD = .90). With regard to the similarity of the respondents to the two prototypes, women felt significantly more similar to the healthy prototype (M = 3.38, SD = .91) than to the unhealthy one (M = 2.36, SD = 1.02). The male respondents tended to rate their similarity to the unhealthy prototype higher than women (t = 2.67, df = 218, p < .05), while there are no differences in similarity ratings concerning the healthy prototype according to gender.

Table 1: Mean scores and standard deviations for items in the eater prototype measure

Factor	Attribute	Mean unhealthy eater Prototype (SD)	Mean healthy eater Prototype (SD)	Discre-pancy^^	*t*-value^
	Self-confident	2.86 (1.17)	3.80 (.97)	-.94	-9.70*
P	Smart	3.00 (1.12)	3.77 (.94)	-.77	-8.91*
O	Independent	3.12 (1.12)	3.58 (1.02)	-.46	-5.38*
S	Nicely dressed	2.65 (1.05)	3.50 (.96)	-.85	-9.41*
I	Considerate	3.18 (1.00)	3.44 (.95)	-.26	-3.68*
T	Friendly	3.27 (.94)	3.36 (.94)	-.09	-1.32
I	Wise	2.57 (1.05)	3.19 (.92)	-.62	-6.87*
V	Popular	2.73 (1.04)	3.15 (.94)	-.42	-4.58*
E	Thoughtful	2.81 (.91)	3.01 (.89)	-.20	-2.66
	Cool	2.96 (1.02)	2.97 (.91)	-.01	-.25
	Anxious	2.77 (.95)	3.15 (1.03)	-.38	-4.10*
N	Stupid	3.56 (1.08)	2.20 (1.03)	1.36	11.56*
E	Self-centered	3.52 (1.00)	3.12 (1.01)	.40	3.88*
G	Dull	3.50 (1.13)	2.16 (.98)	1.34	11.94*
A	Superficial	3.50 (1.04)	2.48 (1.07)	1.02	9.00*
T	Immature	3.37 (2.30)	2.30 (.97)	1.07	9.60*
I	Confused	3.35 (1.14)	2.26 (.96)	1.09	10.08*
V	Unattractive	3.09 (1.17)	2.25 (.99)	.84	7.50*
E	Careless	2.64 (1.36)	2.05 (1.11)	.59	5.01*
	Fat	2.28 (1.23)	1.85 (.97)	.43	4.13*
Favorability		2.77 (.40)	3.64 (.58)	-.87	-16.46*
Attractivity		2.37 (.94)	3.67 (.85)	-1.33	-14.97*
Similarity		2.35 (1.03)	3.41 (.89)	-1.02	-9.88*

*Means differ significantly at $p < .001$.
^Statistical testing (paired sample t-test) for differences between unhealthy and healthy eater prototype.
^^ Scores > 0 indicating a greater likelihood of ascribing the attribute to the unhealthy eater prototype and scores < 0 indicating a greater likelihood of ascribing the attribute to the healthy prototype

Behavioral Willingness

The mean BW to engage in unhealthy eating behavior is in our sample 6.6 (SD = 2.05), and thus lower than the behavioral willingness to engage in healthy eating behavior (M = 8.4, SD = 1.7), meaning that more respondents aim to eat healthy. No gender differences were found for the healthy eater behavioral willingness (t = -1.6, df = 233, p = .10) nor for the unhealthy eater behavioral willingness (t = .75, df = 240, p = .45).

WLD

53% of the respondents said that they never engage in WLD, 38% sometimes, and 6% reported a non-stop dieting behavior. An independent sample *t*-test showed that the male respondents WLD mean score of 1.44 was significantly lower than the one of the women, which was 1.74, (t = -3.22, df = 238, p < .05), meaning that women engage more often in weight-loss dieting behavior than men.

BMI

Contrary to the literature, in our sample women had a lower averaged BMI (M = 23.20, SD = 3.20) than men (M = 26.07, SD = 2.88). According to the WHO-categorization of BMI, in this sample 1.2% are underweight, 45.8% are in the normal range, 43.4% are overweight, and 8.4 % are obese, with women representing a healthier picture than men; 38.8 % of men BMI lies between 18.5 – 24.99, compared to 70.2 % of the women´s BMI, and 60.1 % of the men BMI can be categorized as overweight or obese, compared to 26.4% of the BMIs of women. Table 2 summarizes all above mentioned sample characteristics in more detail.

Table 2: Selected socio-demographic, health and behavioral characteristics of study participants^

	n (men)	Men Mean	SD	n (women)	Women Mean	SD	N	Total Mean	*t*-value^^
Demographic characteristics									
Age (yr)	188	38	8.5	57	34	8.7	249	37.21	3.17*
Weight status	187	26	2.88	57	23	3.02	245	25.45	6.50***
BMI									
Weight classification (%)									
Underweight(BMI<18,5)	1	0.5%		2	3.5%		3	1.2%	
Normal weight(18,5≤BMI<25)	73	38%		40	70%		115	46%	
Overweight (25≤BMI<30	94	50%		14	25%		109	43%	
Obese (BMI≥30)	19	10%		1	1.8%		21	8,4 %	
WLD	183	1.44	.04	57	1.74	.08	243	1.51	-3.22**
WLD classification (%)	112	56%		20	35%		133	53%	
never									
sometimes	61	32%		32	56%		95	38%	
every time	10	5%		5	9%		15	6%	
Socio-economic status									
Educational achievement	187	3.97	.56	57	4.09	.47	244	4,00	-1.4
1:Secondary school	2	1%					2	.8%	
2:High school/ college diploma	23	12%		4	7%		27	11%	
3:Bachelor degree	139	74%		44	77%		183	73%	
4:Master degree	23	12%		9	16%		32	13%	
Unhealthy food consumption	187	2.05	.27	57	1.94	.28	250	2.03	2.75**
Exercise Behavior	185	3.68	1.50	56	3.50	1.55	241	3.63	.77

^^Statistical testing (independent sample t-test and ANOVA) for differences between men and women
*Means differ significantly at $p < .05$
** Means differ significantly at $p < .01$
*** Means differ significantly at $p < .001$

Unhealthy food consumption

The mean frequency of unhealthy food consumption lies at 2.03 (sometimes). Men engage more in unhealthy eating behavior (M = 2.05, SD = 2.7) than women (M = 1.93, SD = 2.8). From table 3 we can see that tortillas and tacos were the most eaten unhealthy food, followed by cookies, quesadillas and gorditas.

Table 3: Descriptive data of the unhealthy food frequency questionnaire for men and women

	n (men)	Men Mean	SD	n (women)	Women Mean	SD	N	Total Mean	*t*-value^^
Unhealthy food consumption	187	2.05	.27	57	1.94	.28	250	2.03	2.75**
Flautas	186	1.93	.56	56	1.86	.52	248	1.92	.50
Chicharrón	186	1.94	.46	57	1.77	.46	249	1.90	2.07*
Mole	187	2.02	.39	57	1.93	.42	250	2.01	1.45
Carnitas	184	1.98	.52	57	1.88	.50	247	1.97	.83
Pelonas	184	1.57	.52	57	1.44	.50	247	1.54	1.53
Chalupas	185	1.84	.48	57	1.77	.46	248	1.83	.55
Molotes	185	1.82	.52	57	1.74	.52	248	1.81	.83
Gorditas	186	2.01	.53	57	1.95	.51	249	2.00	.64
Tortillas	185	3.11	.79	57	2.72	.92	248	3.04	2.89**
Tacos	185	2.43	.60	57	2.21	.65	248	2.39	2.75**
Gateau	184	1.99	.48	57	1.96	.50	247	1.99	.41
Churros	185	1.66	.56	57	1.65	.48	248	1.66	-.30
Cookies	184	2.33	.73	57	2.18	.85	247	2.30	1.91
Ice-cream	184	1.91	.58	57	1.79	.65	247	1.89	1.50
Quesadillas	185	2.28	.65	57	2.23	.63	248	2.27	1.70

^^Statistical testing (independent sample t-test and ANOVA) for differences between men and women
*Means differ significantly at $p < .05$
** Means differ significantly at $p < .01$

Exercise

About 26% of the respondents did not agree with the declaration that they engage at least once per week in exercise behavior, and more than the half of the sample (51%) agreed. No gender differences were found with respect to exercise behavior (t = 0.77, df = 239, p = .44).

3.1.2 Associations between variables

The following contemplated relations between the variables were significant at an alpha of .01 if not indicated differently. Paired sample t-test revealed that the mean prototype favorability differs significantly (t = -16.46, df = 198, p < .001) between the healthy and the unhealthy prototype. The attractivity of the unhealthy eater is significant lower than the attractivity to the healthy eater (t = -14.97, df = 214, p < .001). The similarity to the healthy eater is significantly higher than to the unhealthy prototype (t = -9.88, df = 210, p < .001). As can be seen in Table 4, a significant relation exists between age and the evaluation of the healthy prototype (***r*** = .23). Post hoc test showed that participants in the age between 20-30 years rated the favorability of the healthy prototype significantly worse than participants being aged 41-50 years (***p*** <

.05) or 51-62 years (***p*** < .001). This means that the older the respondent, the more they value healthy eating behavior. Concerning the unhealthy eater image, no association was found between age and the favorability. Age was also positively significantly related with BMI (***r*** = .19), indicating weight gain with increasing years of a person´s life. BMI and attractivity to the unhealthy prototype shows a positive correlation (***r*** = .23), as well as BMI and similarity to the unhealthy prototype (***r*** = .35). The similarity to the unhealthy eater image was negatively related to exercise behavior (r = -.26) and positively to the attractivity of the unhealthy eater (r = .45). The two variables of BW correlated significant negatively with each other (r = -.19), but showed no further relations to the other variables. No significant relation was found between WLD and BMI (F(2,237) = 2.32, ***p*** = .10) when we considered males and females as a whole test group. The other two behavioral constructs (exercise and unhealthy food consumption) did not show any relation with participants' BMI neither. BMI is negatively related to education (***r*** = -.21), indicating that people with a lower educational achievement have higher BMIs. The relation between BMI and attractivity ratings of the unhealthy eater also display a positive relation (r = .23). WLD is negatively associated with the frequency of unhealthy food consumption (***r*** = -.17), and exercise behavior is negatively related with unhealthy food consumption (***r*** = -.22). Sport and WLD are positively correlated but do not show significant power, but it makes it possible to maintain the three behaviors as one construct, which is made up out of the different oppositional behavioral levels, to test if the two actor prototypes have influence on risk / protective health behavior. The attractivity to the unhealthy eater is positively connected with the consumption of unhealthy food (***r*** = .20). Similarity to the healthy eater is negatively associated with unhealthy food consumption (***r*** = -.28), and similarity to the unhealthy eater image (***r*** = -.24). It shows positive relation with exercise behavior (***r*** = .21), the favorability to the unhealthy prototype (***r*** = .18, significant at α = .05), the favorability to the healthy prototype (***r*** = .16), and to the attractivity ratings of the healthy eater image (***r*** = .52). The favorability to the unhealthy prototype correlates amazingly positive with the attractivity to the healthy eater (***r*** = .24), and as already mentioned with the similarity to the healthy

prototype. The following table summarizes the above mentioned results in more detail.

Table 4: Correlations between the variables in our study

	WLD	UFC	Sport	AtrU	SimU	FavU	BWU	BWH	FavH	AtrH	SimH	Educ	Sex	Age	BMI
WLD	--	-.17**	.06	.00	-.04	-.02	-.10	-.08	-.08	.12	.07	-.05	.21**	-.07	.09
UFC		--	-.22**	.20**	.35**	-.02	.06	.00	-.05	-.12	-.28**	-.07	-.17**	.02	.10
Sport			--	-.09	-.26**	.01	.07	.06	.05	.06	.21**	.12	-.05	.05	.03
AtrU				--	.45**	.07	.04	-.04	.06	-.07	-.04	.03	-.16*	.00	.23**
SimU					--	.08	-.02	-.02	.06	-.01	-.24**	-.12	-.18**	-.01	.35**
FavU						--	.05	-.02	-.13	.24**	.18*	-.12	-.15*	-.01	.10
BWU							--	-.19**	-.03	.03	-.02	.02	-.05	.03	.01
BWH								--	.10	-.10	.06	.05	.11	.10	-.11
FavH									--	.19**	.16*	.03	-.09	.23**	.02
AtrH										--	.52**	-.13	.01	-.09	-.07
SimH											--	-.03	.01	-.02	-.23
Educ												--	.09	-.20**	-.21**
Sex													--	-.20**	-.39**
Age														--	.19**
BMI															--

**correlation is significant at the 0.01 level (2-tailed)
*correlation is significant at the 0.05 level (2-tailed)

3.2. PWM Testing

Body Mass Index

All survey data were coded and entered for statistical computer analyses. To examine the hypothesized effects of the PWM a series of hierarchical regression analyses were carried out by dint of SPSS 16.

First, linear regressions were performed with BMI as the dependent variable and the following independent variables: 1) behavioral willingness to engage in unhealthy eating behavior, 2) favorability of the unhealthy prototype, 3) attractivity to the unhealthy prototype,

and 4) similarity to the unhealthy prototype. Subsequently the healthy prototype and the appertaining variables were added. Model 3 included behavioral characteristics with the mean score of the frequency of unhealthy food consumption, the item of doing regular exercise, and the weight-loss-dieting behavior. A final linear regression model included the educational component of the respondent, as well as the age, to explore which of the various measures were most strongly associated with BMI. The regression analysis was carried out separately for men and women (Table 5 and 6 respectively), as we think that gender has influence on how the constructs of the PWM is internalized by people and thus their subsequent behavior.

As can be seen from Table 5, concerning the male respondents, all the constructs of the unhealthy eater did not have a significant contribution to their BMI ($R^2 = .03$; $F(4,119) = .92$, $p = .46$)). Contrary, Table 6 shows that the unhealthy eater constructs were significant predictors of women´ BMI ($R^2 = .38$; $F(4,29) = 4.54$, $p < .01$). Specifically attractivity and similarity to the unhealthy eater were positively associated with BMI ($\beta = .37$, $t(4,29) = 2.28$, $p < .05$ and $\beta = .32$, $t(4,29) = 1.99$, $p < .10$, respectively). The same pattern appeared as we added the constructs of the healthy eater (Model 2). None of them were significant predictors for men´s BMI ($R^2 = .07$; $F(4,19) = 1.06$, $p = .40$), but well for women´s BMI ($R^2 = .47$; $F(4,29) = 2.74$, $p < .01$). Model 3 included the behavioral independent variables, and fits well for both sexes ($R^2 = .16$; $F(4,119) = 1.99$, $p < .05$ for men, and $R^2 = .53$; $F(4,29) = 2.28$, $p < .05$ for women), because now men´s weight-loss dieting behavior explains 29% of their BMI ($\beta = .29$, $t(4,119) = 3.12$, $p < .01$). The higher the BMI of men, the more they engage in WLD.

The full model included all above mentioned variables plus education and age. For women these two variables do not have additional predictive impact on their BMI and the model does not fit well anymore ($R^2 = .56$; $F(4,119) = 1.95$, $p = .09$) as opposed to men ($R^2 = .22$; $F(4,119) = 2.37$, $p < .01$). For the male respondents education was negatively associated with BMI ($\beta = -.20$, $t(4,119) = -2.23$, $p < .05$), meaning that the higher the educational attainment, the lower their BMI.

Table 5: Results from multiple linear regression with BMI as the dependent variable, and various measures of the PWM, three behavior constructs, and demographic characteristics as independent variables. Intercept β (*p*) presented for men (n = 124).

	Model 1	**Model 2**	**Model 3**	**Full Model**
Attractivity of unhealthy eater	.04 (.72)			.05 (.63)
Similarity to unhealthy eater	.12 (.24)			.16 (.15)
Favorability of unhealthy eater	.08 (.36)			.10 (.30)
BW unhealthy	.01 (.91)			.06 (.51)
Attractivity of healthy eater		-.03 (.80)		-.09 (.45)
Similarity to healthy eater		-.15 (.18)		-.20 (.07)ǂ
Favorability of healthy eater		.06 (.55)		.05 (.63)
BW healthy		-.10 (.31)		-.10 (.29)
Unhealthy food consumption			-.10 (.34)	-.09 (.34)
WLD			.29 (.00)**	.25 (.00)**
Sport			.09 (.34)	.15 (.14)
Education				-.20 (.03)*
Age				.12 (.21)
R-squared	.03	.07	.16	.22

**p < .01
*p < .05
ǂp < .10

Table 6: Results from multiple linear regression with BMI as the dependent variable, and various measures of the PWM, three behavior constructs, and demographic characteristics as independent variables. Intercept β (*p*) presented for women (n = 34).

	Model 1	**Model 2**	**Model 3**	**Full Model**
Attractivity of unhealthy eater	.37 (.03)*			.52 (.02)*
Similarity to unhealthy eater	.32 (.06)ǂ			.40 (.06)ǂ
Favorability of unhealthy eater	-.16 (.30)			-.13 (.58)
BW unhealthy	-.17 (.30)			-.26 (.17)
Attractivity of healthy eater		-.15 (.51)		-.01 (.97)
Similarity to healthy eater		-.07 (.73)		-.07 (.80)
Favorability of healthy eater		.33 (.09)ǂ		.20 (.35)
BW healthy		-.23 (.22)		-.18 (.36)
Unhealthy food consumption			.04 (.82)	.11 (.58)
WLD			-.07 (.76)	-.02 (.94)
Sport			.32 (.11)	.20 (.15)
Education				-.15 (.48)
Age				.17 (.35)
R-squared	.38	.47	.53	.56

**p < .01
*p < .05
ǂp < .10

Behavioral Willingness

Another regression analysis was carried out with behavioral willingness as the dependent variable, once for the unhealthy eater and once for the healthy eater with attractivity, similarity and favorability for both cases as independent variables. This time we integrated the gender into one test group. Both models did not show a significant contribution to behavioral willingness, neither to the behavioral willingness to engage in unhealthy eating behavior (R^2 = .01; $F(3,164) = .36$, $p = .78$ for Model 1, and $R^2 = .04$; $F(7,160) = .92$, $p = .49$ for Model 2), nor to the behavioral willingness to engage in healthy eating behavior ($R^2 = .03$; $F(3,164) = 1.74$, $p = .16$ for Model 1, and $R^2 = .06$; $F(7,160)$, $p = .15$ for Model 2).

Health Behavior

Furthermore, we tested if the components of the PWM have influence on health protective behavior (exercise and WLD), as well as on health damaging behavior (unhealthy food consumption), as those behavioral constructs are hypothesized to influence the BMI. All three items were executed in rotation as dependent variable with similarity, attractivity, favorability and behavioral willingness for both eater prototypes as the independent variables. Tables 7-9 show evidence that the two prototypes of un/healthy eaters that participants have in mind, their attractivity ratings of those and their perceived similarity to them, or the BW have influence on their health behavior, so our study give support for the PWM.

Exercise

13% of the variation of doing regular exercise can be explained by the constructs of the Prototype Willingness Model ($F(8,157) = 2.98$, $p < .01$), with similarity to the unhealthy eater being the most influential ($\beta = -.26$, $t(8,157) = -3.00$, $p < .01$), followed by similarity to the healthy eater ($\beta = .19$, $t(8,157) = 2.01$, $p < .05$).

Table 7: Results from linear regression analysis with exercise as the dependent variable, and the constructs of the PWM for healthy and unhealthy eaters as independent variables.

	Model 1		Full Model	
	β	*p*	β	*p*
Behavioral Willingness unhealthy	.05	.51	.06	.45
Favorability of unhealthy eater	.08	.31	.06	.43
Similarity to unhealthy eater	-.32	.00**	-.26	.00**
Attractivity of unhealthy eater	.04	.59	.02	.76
Behavioral Willingness healthy			.03	.71
Favorability of healthy eater			.07	.38
Similarity to healthy eater			.19	.04*
Attractivity of healthy eater			-.05	.58
R-squared	.10		.13	

**$p < .01$
*$p < .05$

Weight-loss dieting

The unhealthy eater variables of the PWM alone were not predictive of WLD ($F(4,157) = 1.83$, $p = .13$), but together with the healthy eater constructs they could explain 11% of the variation of weight-loss dieting ($F(8,153) = 2.31$, $p < .05$), with behavioral willingness to engage in unhealthy eating behavior being the strongest predictor ($\beta = -.22$, $t(8,153) = -2.80$, $p < .01$), followed by the attractivity to the healthy eater ($\beta = .23$, $t(8,153) = 2.36$, $p < .05$). The results are summarized in the following table.

Table 8: Results from linear regression analysis with WLD as the dependent variable, and the constructs of the PWM for healthy and unhealthy eaters as independent variables.

	Model 1		Full Model	
	β	*p*	β	*p*
Behavioral Willingness unhealthy	-.20	.01*	-.22	.00**
Favorability of unhealthy eater	.03	.71	.05	.53
Similarity to unhealthy eater	-.08	.37	-.08	.40
Attractivity of unhealthy eater	.05	.58	.07	.43
Behavioral Willingness healthy			-.05	.53
Favorability of healthy eater			-.11	.16
Similarity to healthy eater			.03	.76
Attractivity of healthy eater			.23	.02*
R-squared	.04		.11	

**p < .01
*p < .05

Unhealthy food consumption

16% of the frequency of unhealthy food consumption in this study can be explained by the constructs of the PWM ($F(8,159) = 3.90$, $p < .001$), with similarity to the unhealthy prototype as the only predictor ($\beta = .25$, $t(8,159) = 2.95$, $p < .01$) at an alpha of .01.

Table 9: Results from linear regression analysis with the score of the unhealthy food consumption questionnaire as the dependent variable, and the constructs of the PWM for healthy and unhealthy eaters as independent variables.

	Model 1		Full Model	
	β	*p*	β	*p*
Behavioral Willingness unhealthy	.11	.13	.11	.14
Favorability of unhealthy eater	-.06	.41	-.04	.62
Similarity to unhealthy eater	.30	.00**	.25	.00*
Attractivity of unhealthy eater	.05	.55	.07	.38
Behavioral Willingness healthy			.04	.62
Favorability of healthy eater			-.09	.22
Similarity to healthy eater			-.17	.06‡
Attractivity of healthy eater			-.01	.91
R-squared	.12		.16	

**$p < .001$
*$p < .01$
‡$p < .10$

Unfortunately, these three behavioral items (WLD, exercise, and unhealthy food consumption) do not contribute to a good regression model to predict BMI ($R^2 = .02$; $F(3,134) = 1.96$, $p = .12$) for women, and only WLD had explanatory relation with the BMI for men.

4. Conclusion

In the following section, we give a comparison of hypothesized (see section 1.4) and actual data of our study. According to H_1, participants hold different images of a typical unhealthy eater and a typical healthy eater, and the evaluation of the healthy eater prototype was more favorable than the evaluation of the unhealthy eater prototype. That means that the ideal of beauty of the Mexican sample in our study is alike with the one found in other studies, executed in Western countries. Thus, it is not a different ideal of beauty that can explain the high prevalence of overweight in Mexico.

Age and gender had a significant effect on the evaluation of the prototypes, with women and older people having a stronger preference for healthy eater images (H_2). Women feel more similar to the healthy eater and find the unhealthy eater less attractive than men. The latter feel more similar to the unhealthy eater, what is in accordance with the higher BMI of male participants.

Contrary to the literature, women had a lower BMI than men, and engaged more in weight-loss dieting behavior than men; maybe this explains the lower BMI of female participants. It might be that women engage more in WLD behavior before they get overweight due to the attempt to avoid negative associations with being overweight. The same interpretation might explain the less frequent unhealthy food consumption of women.

The higher score of men´s unhealthy food consumption might explain their higher BMI, but regression analysis for men showed that the score of the unhealthy food consumption scale did not have explanatory relevance for the BMI, leading to the rejection of H_8.

H_4 was confirmed, as the BMI of respondents increased with lower educational attainment, at least this was observable by the male participants.

Unexpected and highly interesting is the fact that behavioral willingness to engage in healthy eating behavior was not predictive for subsequent behavior in our study. The behavioral willingness to engage in unhealthy eating behavior only was predictive of WLD, but not for exercise, unhealthy food consumption, or the BMI. In our study, the prototype evaluations (favorability, attractivity, and similarity) did not have influence on behavioral willingness as it is suggested in the PWM, neither by the healthy or the unhealthy eater image, so we must refuse H_6.

Altogether, indirect influence of the unconscious prototypes on BMI were not found. We can accept H_3 in so far that the attractivity of the unhealthy eater and marginal the similarity to the unhealthy eater did predict women`s BMI but not men´s BMI, and that the healthy prototype did not seem to have strong relevance. Therefore, we suggest that women – in contrast to men - show sensitivity to PWM. It might be concluded that women do not eat healthy in order to acquire a thin body image, rather they eat healthy to avoid negative associations with unhealthy eating behaviors, because just the unhealthy eater image was important in explaining a person's BMI. The considerable impact of the unhealthy prototype comes also apparent in the regression analysis with one of the behavioral level constructs as dependent variable. Remarkably, all of them were related significantly to the unhealthy eater image. Mainly similarity and behavioral willingness to the unhealthy eater were predictors of

health protective (WLD, exercise) as well as health damaging (unhealthy food consumption) behavior in our study, so we can accept H_7.

In the final linear regression model with BMI as dependent variable, men´s BMIs were mostly related with the education the respondents have enjoyed and their WLD behavior, while women´s BMIs were mostly influenced by their attractivity ratings of the unhealthy eater. This means that they have lower BMIs because they find the unhealthy eater prototype less attractive and want to avoid being seen as such. We can conclude from the results that prototypes have a strong impact on women but not on men, especially the unhealthy eater image (H_3), as only WLD and education had an influence on men´s BMI, but not directly the prototypes.

In conclusion, the constructs of the PWM can explain behavior for a good portion as they contributed to a significant regression line with respect to exercise, WLD, and unhealthy food consumption (H_5), but the behavioral level in this study is not predictive for BMI. This leads to the rejection of H_9, but we can partially give consent to H_{10}, as men´s BMIs show relation to WLD.

Altogether, we can say that a bulk of our hypotheses came out even, and that the study under consideration revealed innovative results that should be investigated in more detail in the future.

5. Discussion

The purpose of this study was to examine if people with a Mexican cultural background hold distinct images of healthy and unhealthy eater prototypes and if those images have influence on their eating behavior and can explain the high rate of obesity in Mexico.

We found that Mexicans do have similar attitudes toward un/healthy eaters as they were found in Western studies with being healthy as valued more attractive, and being unhealthy as not worthwhile, and that these images in turn have relation to health behavior. Our data did not discover a different ideal of beauty that could be responsible for the higher prevalence of overweight and obese people in Mexico. The two prototypes in the present study were different in content from the Gibbons and Gerrard measure, as characteristics such as “cool”, ”friendly”, “thoughtful”, “popular”, and “self-centered” did not seem to be relevant in describing un/healthy eaters. Surprisingly, the attribute “fat” had to be excluded in the unhealthy eater prototype data sheet as well, although it was found out to be the most characteristic attribute for unhealthy eating behavior in other studies (e.g. Gerrits, Ridder, Wit & Kuijer, 2009). This can

be interpreted as a lack of knowledge of Mexican citizens that unhealthy food consumption can lead to overweight, but given the relative high SES of our study participants it is not a reasonable explanation. Another explanation might arise from the dissonance reduction theory of Festinger (1957), as Mexicans often eat unhealthy food and try to reduce the upcoming dissonance by readapting their attitude toward unhealthy eating and therefore saying that it does not have a relation with being fat. The same explanation might be responsible for the correlation between BMI and attractivity to the unhealthy eater. Maybe they actually do not like unhealthy eating behavior, but because they engage in it, they try to reduce the dissonance between behavior and cognition by readapting their attitude and saying that unhealthy eating is attractive. A third attempt to explain the phenomenon that "fat" was excluded, is the cultural dimension, as the attitudes were translated from an English questionnaire, designed for a Western civilization. Maybe the word "fat" has a too explicit negative impact for Mexicans, and should be replaced with "lumpy" in prospective studies.

This different cultural handling should also be kept in mind for future research in Mexico concerning the acquisition of data for the construct of behavioral willingness. The collectivistic cultural background of Mexican people (Hofstede, 2001) makes it improbable to respond to the proposition "I do not want to eat here and prefer to look for another restaurant" with a 5 (very probable), because they do not pursuit only their individual wishes in that they do not want to disrespect the other person and show more politeness than persons living in individualistic environments. Maybe this cultural difference was responsible for the lack in the predictive strength of the behavioral willingness for un/healthy eating behavior in the present study and that favorability, similarity and attractivity have not been significant in predicting BW. For further investigations, the creation of other hypothetical situations is advisable.

The marginal and strong effects of similarity to one of the two prototypes in our study approve that social comparison processes with un/healthy eaters are even more important than the behavioral willingness of people in predicting health behavior and BMI, and therefore give potent support for the social comparison theory.

It is clear that intense changes have occurred over the past two decades in Mexico in the fields of economic advancement and market globalization, which lead to significant dietary changes in the population (Drewnowski & Popkin, 1997). In the unhealthy food frequency questionnaire we only asked for typical Mexican unhealthy food, and did not consider other unhealthy food. Thus a low score on our scale does not mean that the person eats healthy in general, whether it could be that the individual replaced traditional Mexican unhealthy food with for example unhealthy American food such as burgers or drinks like Coca Cola, because

this is seen as a status symbol. To compile a reliable unhealthy food questionnaire, further studies should comprise the Americanization in Mexico. Maybe then the unhealthy food frequency questionnaire will get predictive power for the BMI. Another factor that must be kept in mind while analyzing unhealthy food consumption is the fact that people tend to under-represent their true consumption of unhealthy food, especially when they are overweight and the food is eaten outside the house (Rivera, Barquera, Campirano, Campos, Safdie & Tovar, 2002). A further point that should be mentioned is the development of the unhealthy food consumption questionnaire. It was established by asking Mexicans to name typical unhealthy food. A high inter-correlation of a given food was the inclusion criterion for the questionnaire, but this suffers from great subjectivity. More literature could be used (uptake rate tables) to raise the validity of the unhealthy food consumption questionnaire. Besides this, it would be more precise in future research to measure height and weight of the respondents objectively, even though self-reported data may have satisfactory accuracy.

As we have seen, some constructs of the PWM have been significantly predictive for behavior (WLD, doing exercise, unhealthy food consumption), but barely for BMI in our study. This might be due to inadequate questions, like it was the case above mentioned that a low score on the unhealthy food consumption scale did not mean that the person engages in protective eating habits, and because there were too few questions concerning health behavior. One item about exercise behavior ("I do at least once per week exercise") is not enough to provide a valid physical activity construct, and additionally it is very sensitive to personal valuation about what exercise is, and the time frame of it. Moreover, the questionnaire deals with eating behavior and eater prototypes, that were not per definition related to exercise behavior. Besides this, it could be answered in a social desirable manner. Furthermore, here it should be mentioned that VWM offers very good work conditions, including an offer of healthy food in the staff canteen, that are not comparable to other work places in Mexico, and that all VW employees have the possibility to use sport programs for free. That in turn reduces the barrier of doing regular exercise, and is thus not representative for the general population.

The behavior of weight-loss-dieting did reveal positive association with BMI in the male test group but not among women. That can be explained by the fact that women generally engage more in frequent WLD because it is socially accepted (social appropriateness) and actually expected, even if they are not overweight, and thus the effect is less visible. Men on the contrary engage very rarely in WLD, and if so, it might be when they are already overweight, so the reason might be others than being beautiful, and the effect is stronger, because they have some kilogramm´s to loose. For example, it could be in order to follow a

health motive that was not incorporated in the present study, but which would be interesting to explore in a future investigation. Due to the cross-sectional nature of the BMI it is not possible to comment definitely on the causal relations among variables from our data.

All aspects considered, more extensive questions about dietary intake, fitness and other health related behaviors and the reasons behind it are necessary to provide good predictors for a person's BMI. The same may be the case concerning the SES of respondents, where a second measure as income would be good.

Due to the unequal gender distribution, accompanied by very few female participants, the comparison of these two groups should be treated with caution, as the variables did not have substantial variation concerning female participants.

The external validity of the present study is, as already mentioned, pretty low, because employees of the Volkswagen Company are mainly better educated males living in Puebla with a regular income. This makes it hard to generalize the results to the entire Mexican population, as a good portion suffers from unemployment, poverty, and illiteracy and lives in agrarian areas. On the other hand, the high rural-to-urban shift, the media and the influence of the USA lead many Mexicans to become more modernized, which is responsible for a steadily change in the ideal of beauty, as smaller body sizes get preference (Becker, Gilman & Burwell, 2005). The homogeneity of our study's participants with respect to the high SES, the same work conditions, and the relative good life styles they enjoy makes these people to "early adopters" of a modified ideal of beauty and health behavior. Therefore, the study can be considered to be very modern, and it would be interesting to look how the constructs change over time. Further, it would be a challenge to explore the ideal of beauty of Mexicans in more detail and reveal compelling results concerning the influence of the various prototypes on behavior and BMI in a comparative study with a more individualistic country, e.g. by conducting the same study (with typical German unhealthy food like "Bratwurst") at the VW Company in Wolfsburg.

Although the PWM was initially developed for adolescents, it fits as well for adult behavior, as our results imply, and is applicable in non-Western cultures. Most notable are the different results for men and women, which make it possible to develop gender-adjusted interventions to reduce overweight in Mexico.

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Annex A: Complete Questionnaire in Spanish as it was sent to participants.

Encuesta sobre tu opinión de comida grasosa

Esta encuesta es de la alimentación rica en grasa. Es importante responder las preguntas con honestidad. Quiero saber TU opinión sobre este tema y no hay respuestas buenas o malas. Además esta encuesta es anónima, no tienes que escribir tu nombre.

Las preguntas que siguen son sobre la imagen que tienes sobre cierto tipo de gente. Me gustaría saber tus ideas sobre ellos, como las ideas que tienes sobre una estrella de cine o de una abuela. Todo el mundo tiene una imagen específica sobre estas personas; una estrella de cine generalmente es vista hermosa y/o adinerada. Una típica abuela es representada como vieja y dulce. Esto no significa que todas las estrellas de cine o las abuelas sean las mismas, sin embargo estas personas tienen algunas cosas en común.

En las páginas siguientes, te pido indicar en que medida piensas que algunas de las características se adecuan a una persona típica.
Puedes hacer esto marcando un número (1-5). Cuando piensas que una característica no encaja, tienes que marcar el 1 (totalmente en desacuerdo). Cuando piensas que una característica encaja muy bien, tienes que marcar el 5 (totalmente de acuerdo).

Datos personales:

Edad: _____

Sexo: M□ F □

Altura (cm.): _____

Peso (Kg.): _____

Educación: Primaria □ Secundaria □ Bachillerato/Preparatoria □

Licenciatura □ Maestría □ Doctorado □

1) **¿Puedes indicar en qué medida las siguientes características concuerdan con *una persona de tu edad, que <u>regularmente come comida grasosa</u> y no come mucha comida sana (como verduras y frutas)?***

	totalmente en desacuerdo	parcialmente en desacuerdo	Ni en acuerdo, ni en desacuerdo	Parcialmente de acuerdo	Totalmente de acuerdo
Inteligente, listo	1	2	3	4	5
Confundido	1	2	3	4	5
Popular	1	2	3	4	5
Inmaduro	1	2	3	4	5
Chido, buena onda	1	2	3	4	5
Seguro de sí mismo	1	2	3	4	5
Independiente	1	2	3	4	5
Descuidado	1	2	3	4	5
Sin atractivo, Sin gracia	1	2	3	4	5
Soso, bobo	1	2	3	4	5
Considerado, respetuoso	1	2	3	4	5
Egocéntrico	1	2	3	4	5
Sabio	1	2	3	4	5
Bien vestido, elegante	1	2	3	4	5
Amable	1	2	3	4	5
Gordo	1	2	3	4	5
Tonto	1	2	3	4	5
Receloso, preocupado	1	2	3	4	5
Pensativo	1	2	3	4	5
Imprudente, Superficial	1	2	3	4	5

¿Qué tan similar eres a este tipo de persona?

De ninguna manera				Completamente similar
1	2	3	4	5

¿Puedes indicar que tan atractivas te parecen este tipo de personas?

Para nada atractiva				Muy atractiva
1	**2**	**3**	**4**	**5**

2) Imagínate que estas comiendo con un amigo en un comedor/ restaurante y se venden solamente alimentos grasosos como Molotes, Chalupas, papas a la francesa, y Gorditas. Cual es la probabilidad de que en esta situación:

a) Tú disfrutes esta comida grasosa con tu amigo y la comas con gusto

De ningún modo probable				Con toda la probabilidad
1	2	3	4	5

b) Tú no comas ahí y prefieras ir a otro lugar donde sirvan comida fresca y sana.

De ningún modo probable				Con toda la probabilidad
1	2	3	4	5

3) ¿Puedes indicar en qué medida las siguientes características concuerdan con *una persona de tu edad, que regularmente come comida sana (como verduras y frutas) y evita los alimentos con grasa*

	totalmente en desacuerdo	parcialmente en desacuerdo	Ni en acuerdo, ni en desacuerdo	Parcialmente de acuerdo	Totalmente de acuerdo
Inteligente, listo	1	2	3	4	5
Confundido	1	2	3	4	5
Popular	1	2	3	4	5
Inmaduro	1	2	3	4	5
Chido, buena onda	1	2	3	4	5
Seguro de sí mismo	1	2	3	4	5
Independiente	1	2	3	4	5
Descuidado	1	2	3	4	5
Sin atractivo, Sin gracia	1	2	3	4	5
Soso, bobo	1	2	3	4	5
Considerado, respetuoso	1	2	3	4	5
Egocéntrico	1	2	3	4	5
Sabio	1	2	3	4	5
Bien vestido, elegante	1	2	3	4	5
Amable	1	2	3	4	5
Gordo	1	2	3	4	5
Tonto	1	2	3	4	5
Receloso, preocupado	1	2	3	4	5
Pensativo	1	2	3	4	5
Imprudente, Superficial	1	2	3	4	5

¿Qué tan similar eres a este tipo de persona?

De ninguna manera				**Completamente similar**
1	**2**	**3**	**4**	**5**

¿Puedes indicar que tan atractivas te parecen este tipo de personas?

Para nada atractiva				**Muy atractiva**
1	**2**	**3**	**4**	**5**

4) **Imagínate que estas comiendo con un amigo en un comedor/ restaurante y se venden solamente alimentos sanos como ensalada, frutas, verduras y comida sin grasa. Cual es la probabilidad de que en esta situación:**

a) Tú disfrutes la comida con tu amigo y comas alimentos sanos con gusto

De ningún modo probable				Con toda la probabilidad
1	2	3	4	5

b) Tú no comas ahí y prefieras ir a otro lugar donde sirvan comida rica en grasa

De ningún modo probable				Con toda la probabilidad
1	2	3	4	5

5) **¿Cuantas veces comes los siguientes alimentos?**

	Nunca	Ocasionalmente	Frecuentemente	Casi diario
Flautas	1	2	3	4
Chicharrón	1	2	3	4
Mole	1	2	3	4
Carnitas	1	2	3	4
Pelonas	1	2	3	4
Chalupas	1	2	3	4
Molotes	1	2	3	4
Gorditas	1	2	3	4
Tortillas	1	2	3	4
Tacos	1	2	3	4
Pastel	1	2	3	4
Churros	1	2	3	4
Galletas	1	2	3	4
Helado de crema	1	2	3	4
Quesadillas	1	2	3	4

6) **¿Con qué frecuencia hiciste una dieta especial en los últimos dos años?**

Nunca□ **1-3 Veces□** **4-7 Veces□** **8-10 veces □** **Todo el tiempo□**

7) **Hago deporte por lo menos una vez a la semana.**

Totalemente en desacuerdo	Parcialmente en desacuerdo	Parcialmente acuerdo	De acuerdo en gran parte	Totalmente de acuerdo
1	2	3	4	5

¡Muchas gracias para tu atención!