ISCTE IUL

Instituto Universitário de Lisboa

Lisbon University Institute

IUL School of Social Sciences

Department of Social and Organizational Psychology

Food as a Way to Convey Masculinities: How Conformity to Hegemonic Masculinity Norms Influences Men's and Women's Food Consumption

Lúcia da Silva Campos

Dissertation submitted as partial requirement for the conferral of

Master in Social and Organizational Psychology

Supervisor:
Dr. Sónia Gomes da Costa Figueira Bernardes, Assistant Professor,
ISCTE-IUL

Co-supervisor:
Dr. Cristina Isabel Albuquerque Godinho, Invited Assistant Professor,
ISCTE-IUL

October, 2016

I

Agradecimentos

À Professora Doutora Sónia Bernardes por ter aceitado orientar este projecto, por ter garantido o rigor científico do mesmo, pela sua disponibilidade constante e por todo o apoio que me deu.

À Professora Doutora Cristina Godinho, por ter aceitado juntar-se a este projecto, pelo seu contributo científico, e por me ter encorajado ao longo desta etapa.

A ambas, o meu reconhecimento por terem acreditado no meu trabalho, às vezes mais do que eu própria.

Aos meus pais, que me deram todas as oportunidades para que fosse possível chegar aqui, e que, inadvertidamente, me guiaram até à área do género. À minha mãe, pelo exemplo que é e pela sua paciência infindável, e ao meu pai, por acreditar incondicionalmente em mim.

À minha irmã, por estar sempre disponível para ser a minha "parceira no crime".

À Joana, por me ter ensinado a ser positiva, por abdicar do seu tempo para me ajudar, e por estar sempre disponível para ouvir todas as minhas lamentações. Fico à tua espera em Sintra!

Ao João, por todas as "boleias" de comboio, em que, mesmo não se apercebendo, contribuiu para as minhas ideias (e para a minha sanidade mental!).

Ao Bernardo, por ter sido o meu consultor informal, mesmo com todos os "não sei".

Por fim, a todos os que se disponibilizaram a participar neste estudo, tornando-o, assim, possível.

Resumo

Os hábitos de alimentação inadequados têm um grande impacto na saúde dos indivíduos. A literatura mostra que existem diferenças de sexo na sua adopção; no entanto, o sexo não é o único factor explicativo, com o género a desempenhar um papel vital nesta relação. Tendo como base o Modelo do Género em Contexto (Deaux & Major, 1987) e a Teoria de Foco na Conduta Normativa (Cialdini, Reno, & Kallgren, 1990; Cialdini, Kallgren, & Reno, 1991), pretendemos investigar de que forma a conformidade às normas de género, particularmente as da masculinidade hegemónica, influenciam o consumo de carne, fruta e vegetais de homens e mulheres, e em que medida contextos em que o género se encontra saliente influenciam esta relação. Pretendemos também explorar se as diferenças de sexo no consumo destes alimentos são mediadas pela conformidade com as normas de masculinidade. Num desenho quase-experimental, 519 participantes concluíram a versão portuguesa do Inventário de Conformidade com as Normas de Masculinidade, e responderam a questões sobre o seu consumo na semana anterior de carne, frutas e vegetais; adicionalmente, metade dos participantes receberam uma mensagem destinada a tornar saliente as questões de género. As nossas hipóteses foram parcialmente confirmadas; a relação entre a conformidade com as normas de masculinidade e o consumo alimentar foi moderada pela saliência de género, e as diferenças de sexo no consumo alimentar foram parcialmente mediadas pela conformidade às normas de masculinidade. Este estudo demonstra, assim, que o género é um factor explicativo dos padrões de consumo alimentar de homens e de mulheres, quer através da conformidade às normas de género, quer através de contextos em que o género está saliente.

Palavras-chave: Género, Masculinidades, Estereótipos, Normas, Consumo Alimentar

PsycINFO Codes:

3020 Group & Interpersonal Processes

3360 Health Psychology & Medicine

Abstract

Unhealthy eating habits have a great impact on people's health. Literature shows that there are sex-related differences in their adoption; however, sex is not the only explaining factor, with gender playing a vital role in this relation. Drawing upon the Gender in Context Model (Deaux & Major, 1987) and the Focus Theory of Normative Conduct (Cialdini, Reno, & Kallgren, 1990; Cialdini, Kallgren, & Reno, 199), we aimed to investigate how conformity to gender norms, particularly hegemonic masculinity norms, influenced men's and women's meat, vegetables and fruit consumption, and how gender-salient contexts moderated this relation. We also aimed to test if sex-related differences in these foods' consumption were mediated by the conformity to hegemonic masculinity norms. In a quasi-experimental between-subjects design, 519 participants completed the Portuguese version of the Conformity to Masculinity Norms Inventory, and answered questions about their past week's meat, fruit and vegetable consumption; additionally, half of the participants received a message designed to manipulate gender salience while the other half did not. Our hypotheses were partially confirmed; the relationship between the conformity to masculinity norms and food consumption was moderated by gender salience, and sex-related differences in food consumption were partially mediated by the conformity to masculinity norms. Therefore, this study showed that gender is an explaining factor of food consumption patterns of men and women, both through conformity to gender norms, and through contexts were gender is salient.

Keywords: Gender, Masculinities, Stereotypes, Norms, Food Consumption

PsycINFO Codes:

3020 Group & Interpersonal Processes

3360 Health Psychology & Medicine

Contents

Index of Tables

Table of Figures

Chapter 1 – Introduction

Noncommunicable diseases (NCDs) are chronic, non-transmissible illnesses (e.g., cardiovascular diseases, cancer, diabetes and chronic respiratory disease). In 2012, NCDs were responsible for 68% of all deaths worldwide, according to the World Health Organization (WHO, 2016). WHO predicts an increase in this number of deaths if prevention measures are not followed. Despite this, NCDs are largely preventable, as they have as their main risk factors behaviours such as tobacco and harmful alcohol use, physical inactivity and unhealthy diets.

This last risk factor includes both high consumption of red and processed meat – suggested to be linked to a higher risk of colorectal cancer, type 2 diabetes and cardiovascular disease (Boada, Henríquez-Hernández, & Luzardo, 2016) –, and low fruit and vegetable consumption, foods that are considered protective of all the health problems mentioned above (WHO, 2003).

These food consumption patterns have a great impact on health; in fact, according to the Portuguese Directorate-General of Health (2015), inadequate eating habits are the leading cause of healthy years lost in Portugal. Unhealthy eating habits are responsible for 19.2% of the loss of healthy years in the Portuguese population (in which low fruit consumption has the most weight, while low vegetable consumption is the third contributor, and processed meat consumption is the fifth).

Given the impact of food consumption patterns in health, it becomes important to study the factors that influence their adoption. Consequently, the aim of the present study is to expand the knowledge on psychosocial correlates of food intake, namely, how sex and gender are associated with food consumption. We will start by distinguishing the notions of sex and gender, examining how both concepts can significantly impact people's food consumption patterns. We will then analyse, more specifically, how masculinity norms can affect individuals' consumption of meat, fruit and vegetables, which will be the specific focus of the present research.

1.1. Sex differences in food consumption

Sex has an important role in food consumption patterns. Studies show that inadequate eating habits are more prevalent in men than in women; men show a greater tendency to eat red meat than women, and are less favourable to a vegetarian diet, stating that "humans are meant to eat meat" (Ruby, 2012, p. 143), and defending that, in order to have a healthy diet, one should eat meat. Women also appear to be more concerned with the ethical aspect of meat

production than men, according to a social survey carried by Beardsworth et al. (2002). Regarding fruit and vegetable consumption, Wardle et al. (2004) analysed sex-related differences in eating behaviour in 23 countries and concluded that women show a greater tendency to eat more fruit, avoid fat and to eat more fibre than men. These differences are also present in the Portuguese population (INE/INSA, 2009), and are observed since a young age – in a Portuguese sample of teenagers, with ages between 10 and 20 years old, the same results were found concerning fruit and vegetable consumption (Matos, Simões, Camacho, Reis, & Equipa Aventura Social, 2015).

There are also quantity differences in food consumption between men and women. Generally, men eat more than women (Beer-Borst, 2000; Pliner, Bell, Hirsch, & Kinchla, 2006) and need, on average, a greater amount of calories, since they are typically larger and have more musculature than women (Rolls, Fedoroff, & Guthrie, 1991). However, a study by de Castro (1995) showed that sex is a greater predictor of daily intake than weight and height, which might suggest that these sex-related differences are not only explained by physiological factors, namely, individuals' body size.

There is also evidence that men eat less when stressed, as opposed to women, who report to eat more in stressful situations. For example, Grunberg and Straub (1992) found that, in a stressful condition (viewing a movie about industrial accidents) men ate significantly less, independently of the food type – "sweet, salty or bland" (Grunberg & Straub, 1992, p. 98). In contrast, when analysing women's food intake, although there were no statistically significant differences between the stress and the control conditions, the authors noted a tendency for an increase in the consumption of sweet and bland foods.

In sum, there is now some evidence suggesting the presence of sex-related differences in food consumption patterns; generally, men eat more quantities and have a greater tendency to eat red meat, and women tend to eat more fruits and vegetables. However, as we have pointed out, these differences might not exclusively be dependent on physiological aspects, and can also be accounted for by psychosocial factor, namely, gender issues.

1.2. Gender differences in food consumption

It is interesting to understand how gender comes into play in the relation between sex and food consumption, since, as we have seen, the latter has an important effect in people's health. Nevertheless, it is worth mentioning that, while a great number of published studies use the term gender, they are addressing sex: participants are divided into two categories (male or female), which "are often inferred by social characteristics, like how people dress or

present themselves" (Bernardes, Keogh, & Lima, 2008, p. 428). Thus, in order to better understand the role of sex and gender on food consumptions patterns, these concepts should be differentiated.

1.2.1. Distinguishing sex and gender. Mixing sex and gender seems rather restrictive when trying to understand behaviours. Sex is described as the result of genetics and biology; a person is defined as male or female depending on his/her pairs of chromosomes, or the biological and physical characteristics resulting from them – such as differences in the reproductive or hormonal systems (external genitalia, gonads and secondary sex characteristics). Therefore, this description is largely based on the biomedical model, putting aside the psychological and social aspects that are enrolled in the categorization of individuals, by rooting these differences between men and women in biology (Bernardes, Keogh & Lima, 2008; West & Zimmerman, 1987). Moreover, as Bernardes, Keogh & Lima, 2008) noted "(…) the sex category a person is placed in does not necessarily correspond to their biological sex" (p. 428), as is the case of, for example, transsexuals or intersexes. In other words, this separation of the biological and psychological/social aspects "(…) leaves tremendous areas of behavior, feelings, thoughts and fantasies that are related to the sexes and yet do not have primarily biological connotations" (Stoller, 1968, preface, p.6).

Gender, on the other hand, is a social construction. West and Zimmerman have supported this idea, stating that "(…) rather than as a property of individuals, we conceive of gender as an emergent feature of social situations" (1987, p. 126). As Amâncio (1992), summarizes, gender can be defined as specific representations (common knowledge) about what it is to be a man and to be a woman, the norms that rule women's and men's behaviours and their roles; these representations vary according to the culture, and are based on socialization. Gender is, accordingly, "performed" (McCreary & Chrisler, 2010, p.1).

In a nutshell, gender is not a synonym for sex; they can be relatively independent constructs, since gender refers to the psychological and social aspects of sex (Bernardes, Keogh & Lima, 2008; Deaux, 1985) or, in other words, the "(…) nonphysiological components of sex that are culturally regarded as appropriate to males or to females" (Unger, 1979, p. 1086). In fact, and as Unger states, there is a difference "(…) between maleness and masculinity and femaleness and femininity" (1979, p. 1086); while the concepts of maleness and femaleness come from biological criteria, Unger defines masculinity and femininity as sociopsychological terms. Likewise, Connell addresses gender as the product of social learning and socialization (Connell, 1995).

In sum, sex and gender are different and independent constructs, which need to be disentangled in order to better understand their influence on individuals' food consumption patterns. If, in the previous section, we have reviewed findings on sex-related differences in food intake, we now turn to the analysis of how gender may influence men's and women's food consumption patterns.

1.2.2. How gender influences food consumption. Gender is a complex and multidimensional construct with several associated concepts, e.g., gender stereotypes, gender identities, gender roles, gender norms, gender performances, gender ideologies (Bernardes, Keogh, & Lima, 2008). It is beyond the scope of this paper to define them all. We will focus exclusively on the gender-related concepts that have been mostly used in the literature to understand food consumption patterns. More specifically, we will first start by defining the concept of gender stereotypes, and analyse studies that relate gender stereotypes to food consumption. We will then examine the concept of gender roles and norms, and explain how contextual cues, namely gender salience, may affect their influence on individuals' behaviour; lastly, we will present the concept of masculinities and adherence to masculinity norms, on which we will draw upon to conceptually frame the main aims of our study.

1.2.2.1 Gender stereotypes and food consumption. Gender stereotypes are "(…) generalized preconceptions about the attributes of males and females" (Bussey & Bandura, 1999, p. 678). Crawford and Unger (2004) point out the social nature of gender stereotypes, mentioning that they are culturally shared. These preconceived ideas are largely based on physiological traits, or on the reproductive systems (McCreary & Chrisler, 2010; Lee & Owens, 2002; West & Zimmerman, 1987). Men are believed to be stronger than women, invulnerable and capable of leadership; women are seen to be gentler and responsible for taking care of the family (McCreary & Chrisler, 2010). We must, again, take into account that society is one of the "carriers" of these stereotypes, through certain reactions or behaviours towards and around the person, since he or she was a child (Bussey & Bandura, 1999). But how do gender stereotypes relate to food consumption?

There is evidence that red meat consumption is stereotypically associated with masculinity, while fruits and vegetables are linked to femininity (Basow & Kobrynowicz, 1993; Gough, 2007; Ruby, 2012; Schofield, Connell, Walker, Wood & Butland, 2000; Wardle et al., 2004). Kimura et al. (2009) conducted a study with Japanese participants in which it was examined, with a priming task, if people attributed gender stereotypes to specific dishes;

reaction times were significantly shorter when a presented forename was congruent with the dish associated to a specific gender stereotype. Foods considered congruent with a female forename were "cake, fruit, pudding, ice cream parfait, pasta, and salad" (Kimura et al., 2009, p. 522), while meat dishes were associated with a male forename.

With the purpose of studying how the eating behaviour of the eater affects how he/she is perceived, Bock and Kanarek (1995) presented a cover story about a fictitious target, with a male and a female version; it contained, among others, information about the target's food preferences, with the purpose of examining the effect that this information had on the perception of the target. They found that targets who supposedly ate small meals were rated as more typically feminine and less typically masculine that the targets who ate larger meals.

Basow and Kobrynowicz (1993) filmed the same woman eating four different meals (which varied in size, between small or large, and between more typically feminine –a salad – or more typically masculine foods – a meatball sandwich; these ranks were based on a pre-test). After the participants watched one of the films, they had to evaluate her gender-stereotypical traits, using an adapted version of the Bem Sex Role Inventory (Bem, 1974). The authors concluded that, when participants watched the woman eating the small typically feminine meal, she was considered more socially appealing.

Stein and Nemeroff (1995) found that judgements about food were moderated by the sex of the eater: food eaten by a male target was rated as healthier and lower in fat than when it was eaten by a female target. The authors relate this finding to the stereotype of male body's invulnerability. Another curious finding of this study was that when the target ate "good-foods" (a distinction made based on a pilot-study), he or she was rated as "more feminine, attractive, likable and less masculine" (Stein & Nemeroff, 1995, p. 486), comparing to "bad-food" eaters.

In sum, these studies show that stereotypical masculinity is associated with meat and large quantities of food, and stereotypical femininity is associated with small, lighter meals. Moreover, our perceptions of others are influenced by the content and size of the meal, thus highlighting that men and women are perceived differently because the content of gender stereotypes relating to food are different for men and women.

1.2.2.2. Gender in context: gender roles, norms and food consumption. As we have seen, gender stereotypes "(…) serve as messengers about the appropriate social roles and behaviors of women and men" (Crawford & Unger, 2004, p. 57). In this sense, gender stereotypes, as all stereotypes conveyed by society, can condition an individual's behaviour,

since "(…) stereotypical prescriptions constitute social norms to which men and women are expected to adhere" (Barreto & Ellemers, 2013, p. 290). In line with the Focus Theory of Normative Conduct (Cialdini, Reno, & Kallgren, 1990; Cialdini, Kallgren, & Reno, 1991), gender norms can be descriptive or prescriptive (injuctive). Descriptive norms define how women and men generally are, "what is normal" (Wood & Eagly, 2009), while prescriptive norms describe how women and men should be, how they should and should not behave (Diekman & Goodfriend, 2006). Eagly and Karau (2002, p. 574) added that "(…) gender role thus refers to the collection of both descriptive and injunctive expectations associated with women and men". Moreover, Kallgren, Reno, and Cialdini (2000) concluded that these norms have different influences on action, but only when they are salient – i.e., when they are "focal in attention" (Cialdini et al., 2006, p. 4), and, thus, brought to consciousness.

Keeping in mind these theoretical notions, we can look at another perspective of gender's influence in food intake. Studies have shown that women eat less when paired with a desirable male partner (a contextual variable manipulated in order to make gender salient), so as to look more feminine. The same does not happen to men, who eat less in the presence of women, independently of their attractiveness, presumably, to be polite as Mori, Chaiken and Pliner (1987) suggested. Conversely, men eat more in the presence of other men; Conner and Armitage (2002) have proposed that this happens based on a motivation for competition. However, there is evidence that suggests that men eat more when women are present, as opposed with when other men are present (Sigirci, Kniffin, & Wansink, 2014). These studies reflect the influence of impression-management goals on food intake (Herman, Roth and Polivy, 2003): we use food (and sometimes manipulate food intake) to convey a specific (gendered) impression about ourselves. This can be a possible explanation for why women show more propensity to diet and to lose weight; it can be because of the social pressure to appear thin, and because of the stereotype that feminine women eat little.

It is interesting to reflect on these results using Deaux and Major's model of gender in context (Deaux & Major, 1987). The authors propose that the "(…) enactment of gender primarily takes place within the context of social interaction" which is a "(…) process of identity negotiation whereby perceivers and selves (targets) attempt to attain their interaction goals" (Deaux & Major, 1987, p. 370). Therefore, people's motivation to behave in a certain way cannot only be resumed to biological or previous socialization components because "(…) behaviors may differ widely as a function of personal choice, the behavior of others, and the situational context" (p. 371). Concern for one's self presentation may motivate individuals to

behave ("foodwise") in ways that are congruent with the stereotypes associated with the gender one identifies with.

Social norms constitute a role that people are expected to perform (Burr, 1998, cited by Oliveira & Amâncio, 2002), and they lead to social sanctions when behaviours are dissonant (Diekman & Goodfriend, 2006; Oliveira & Amâncio, 2002). Boys and girls are pressured to conform to gender norms from a young age, suffering social sanction (such as bullying and ostracism) when they do not comply with their gender's norms (Basow, 2010). Furthermore, "boys, who have a stricter gender role than girls do, are more often punished by their peers for perceived gender-role violations" (Basow, 2010, p. 282). However, in line with the gender in context model (Deaux & Major, 1987), gender norms should not be considered independent binary entities (Amâncio, 1993), but rather a continuum to which individuals position themselves; individuals may present various degrees of conformity to gender norms, since, as we believe, gender is not static, but is continually constructed (West & Zimmerman, 1987, p. 125).

Although Deaux & Major's gender in context model (1987) seems to have a heuristic value when trying to conceptualize how gender roles and norms may influence men's and women's food consumption patterns, not many studies have drawn upon this theoretical background to do so. Indeed, the previous sections showed that: (1) most authors have focused on describing sex-related differences in food consumption patterns instead of using gender-related concepts to account for such differences; and (2) gender-based research has been more focused on exploring the contents of gender stereotypes and food intake than on investigating how individual differences in the adherence to such gender norms may account for men' and women's food intake behaviour. It is this work's general aim to bridge these gaps in the literature, by investigating the role of individual's adherence to masculinity norms on their food consumption patterns. But, why masculinity norms?

As mentioned earlier, men generally are more favourable than women to meat consumption and less to fruit and vegetable consumption, which puts their health at risk. It is, thus, important to understand how gender, particularly masculinity norms, can predict men's (but also women's) food consumption.

1.2.3. Masculinities and food consumption. Following the idea that gender is dynamic and influenced by the social context, we defend that there are many ways of being a man. However, men suffer social expectations to behave accordingly to the current male stereotype, which they may choose to conform to or not (Mahalik et al., 2003).

Literature distinguishes three concepts of masculinity. First, the hegemonic masculinity, viewed as the dominant group; it conceives men as heterosexual, aggressive, physically strong and invincible, capable of overpowering women and other men; however, Connell and Messerschmidt (2005) noted that this is not the statistical norm, since only a few men live up to this standard. It embodies "(…) the currently most honoured way of being a man, it required all other man to position themselves in relation to it, and it ideologically legitimated the global subordination of women to men" (Connell & Messerschmidt, 2005, p. 832). The historic and cultural aspects of this norm need to be noted, as they are social constructions that vary in time and can be replaced by new conceptions.

The second notion of masculinity is the one of subordinated masculinity, which refers to any form of being a man that does not fit the standard of hegemonic masculinity. Connell (1997) and Connell and Messerschmidt (2005) used the concept of intersectionality as a means to explain this idea, since it occurs frequently in ethnic or sexual minorities. Subordinated masculinity is "(…) formed at the bottom of the gender hierarchy among men" (Connell, 1997, p. 8)

Thirdly, we have complicit masculinity, that is, the acceptance of the patriarchal system and its benefits, without overtly engaging in any form of oppression. Connell (1997) posits that this is the largest group.

Mahalik et al. (2003) developed an instrument designed to access the degree of conformity to masculinity norms, and found, in an American male's sample, the existence of 11 masculinity norms that correspond to the hegemonic masculinity ideal: Winning, Emotional Control, Risk-taking, Violence, Power over Women, Dominance, Playboy, Self-reliance, Primacy of Work, Disdain for Homosexuals and Pursuit of Status. This study was successfully replicated in other cultures (Cuéllar-Flores, Sánchez-López, & Dresch, 2011; Rochelle & Yim, 2015), including the Portuguese (Leitão, 2015) showing that these norms are shared between cultures.

Again, men suffer pressures to meet hegemonic masculinity expectations, as well as to dissociate from femininity (O'Neil, Helms, Gable, David, & Wrightsman, 1986). There is, for example, social pressure for men to adopt risky behaviours and to depreciate health-protective behaviours, in order to convey the ideal of hegemonic masculinity – "(…) a man should be

large, strong and physically capable, with low body fat and large well-defined muscles" (Lee & Owens, 2002, p.69). On the other hand, since women are traditionally responsible for nurturance, they are in charge of taking care of the health of men, which adds an extra burden to women and leads to a lack of information for men about their own health. In the words of de Souza and Ciclitira: "(…) the care for men's health is constructed to be a woman's responsibility; while men are constructed as infantile and requiring care" (2005, p. 802).

In this line of thought, Schofield, Connell, Walker, Wood & Butland (2000) also refer the greater reluctance to seek help for mental problems, because "(…) denial of depression is one of the means men use to demonstrate masculinities" (Courtenay, 2000, p. 1397), and that can often increase the probability of engaging in alcohol or substance abuse, or even suicide. The same author cites numerous studies that describe the health stereotype of men as "(…) independent, self-reliant, strong, robust and tough" (2000, p. 1387), and stresses that men's health conduct leads not only to engaging in behaviours consistent with the hegemonic masculinity norms, but also to rejecting any norm of femininity. Relating to this is the violence that homosexual men are exposed to; men who endorse the hegemonic masculinity norms may engage in violent behaviour so as to distance themselves from any form of subordinated masculinity (any form of being a man that does not fit the standard of hegemonic masculinity), and to live up to the ideal of robustness.

In sum, literature highlights the influence of the adherence to hegemonic masculinity norms on health in general, referring to how men traditionally behave in order to comply with these same ideals (hence, focusing on descriptive norms). However, to the best of our knowledge, there seems to be a void in trying to understand how adherence to prescriptive masculinity norms impact on health, and especially, on food consumption. Therefore, this study will generally aim to investigate the relationship between adherence to masculinity norms and food consumption patterns.

1.3. Aims and Hypotheses

In the last section, we reviewed studies that indicate that the descriptive dimension of gender norms affects how and what men and women eat, or how they are perceived depending on what they eat. However, to our knowledge, no previous studies have yet focused on the influence of prescriptive norms, particularly masculinity norms, on food consumption. In the present study, we intended to explore the association between the conformity to prescriptive masculinity norms and food consumption. In line with the previous

literature on the impact of masculinity norms on men's health, we will first test the model depicted in Figure 1. More specifically, we expected that:

H1: higher levels of conformity to masculinity norms will be related to higher meat consumption;

H2: higher levels of conformity to masculinity norms will be associated with lower levels of fruit and vegetable consumption.

Based on the gender in context model (Deaux & Major, 1987) and the Focus Theory of Normative Conduct (Cialdini, Reno, & Kallgren, 1990; Cialdini, Kallgren, & Reno, 1991) we also intended to investigate to what degree gender salience moderates the relation between the adherence to masculinity norms and food consumption. We predicted that:

H3: the relation between conformity to masculinity norms and food consumption will be stronger when gender is contextually salient.
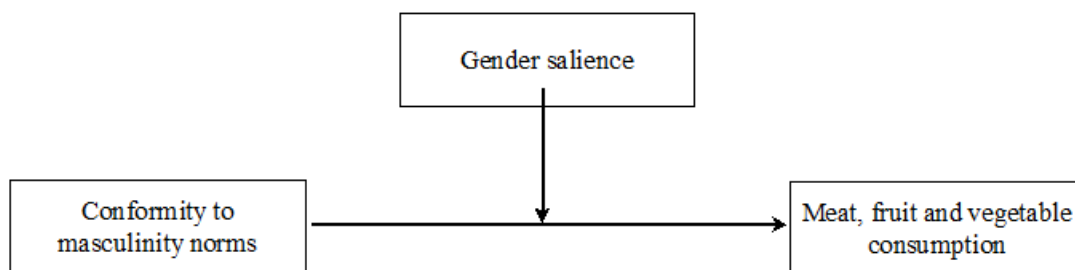
Figure 1 - Conceptual model of the moderation of gender salience on the relation between conformity to masculinity norms and meat, fruit and vegetable consumption

When studying masculinities, most studies have focused solely on men (Levant, Hall, Weigold, & McCurdy, 2015; Mahalik et al., 2003; Parent & Morandi, 2011). Therefore, we also intended to further explore how women's conformity to masculinity norms influenced their food intake; however, given the exploratory nature of this part of the study, we did not know if the hypotheses posited for men could be generalised to women.

We further intended to investigate the model depicted in Figure 2. More specifically, we wanted to know whether the conformity to masculinity norms was a mediating mechanism of sex-related differences in food consumption. Accordingly, and drawing upon the literature that we have previously mentioned, we expected that:

H4: women would report eating more vegetables/fruit and less meat than men

H5: conformity to masculinity norms would account for (i.e., mediate) sex-related differences in fruit/vegetables and meat consumption.
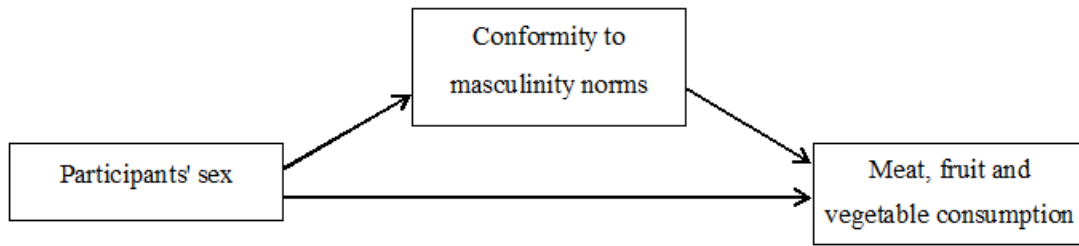
Figure 2 - Conformity to masculinity norms as mediator of the relation between participants' sex and their meat, fruit and vegetable consumption

Chapter II – Method

2.1. Participants

An online questionnaire was accessed by 934 individuals; however, 394 participants (42.18%) dropped out before total completion. Therefore, only the completed questionnaires were considered. There were no statistically significant differences (all $p > 0.05$) between those who completed the questionnaire and those who dropped out, in relation to sociodemographic variables (sex, age, marital status, region, level of education, employment status and dietary restrictions).

Data on participants with dietary restrictions relevant to this study (vegetarianism, no meat and/or processed meat consumption) were removed from the sample ($n = 16$ individuals, 2.96% of the total sample, 4 men and 12 women).

The final sample consisted of 519 individuals (64.93% women), ranging in age from 17 to 68 years old ($M = 43.70$; $SD = 10.63$). Many respondents lived in Lisbon metropolitan area (38.54%), whilst the others were unevenly spread across the country. Around one third (33.91%) had education below the university level, and the remaining 66.09% had higher education degrees. Most participants (63.78%) were married or were part of an unmarried couple, and 89.60% were employed.

Regarding the final sample, there were sex-related differences only in geographical distribution ($\chi^2_{(6)} = 13.34$; $p = 0.04$; there is a statistically significant difference in Alentejo, with 18 women and 2 men) and education level ($\chi^2_{(7)} = 17.58$; $p = 0.01$); more women than men reported having higher education degrees (68.5% vs. 61.5%).

2.2. Design and Independent Variables

This study consisted of a 2 (Gender salience: low vs high) x 2 (Participants' Sex: Male vs. Female) quasi-experimental between-subjects design.

Gender salience was manipulated by stating, after the first part of the questionnaire, "You have now finished the first part of the questionnaire, which was intended to evaluate your masculinity/femininity score. Please proceed to the second part."; in the low salience condition, the message shown was "You have now finished the first part of the questionnaire, which was intended to evaluate your attitudes and values. Please proceed to the second part." Respondents were randomly assigned to the gender salience conditions. 261 (50.29%) respondents were randomly assigned to the high salience condition, while 258 (49.71%) were assigned to the low salience condition. There were no statistically significant differences

between participants assigned to the two conditions in relation to the sociodemographic variables.

At the end of the questionnaire, two questions were included as manipulation checks; the first question was "To what extent did you feel that your masculinity/femininity was being assessed in this study?", measured in a scale of 1 ("Not at all") to 7 ("Completely"). The second question was "To what extent did this questionnaire make you think about your masculinity/femininity?", rated on a scale of 5 points (from "Not at all" to "A lot"). The two items were significantly correlated ($r_{s\text{-}b\,(517)} = 0.53$; $p < 0.01$).

2.3. Instruments

2.3.1. Conformity to Hegemonic Masculinity Norms. A reduced version of the Conformity to Masculinity Norms Inventory (CMNI; Mahalik et al., 2003; validated to the Portuguese population by Leitão, 2016) was used to evaluate respondents' conformity to hegemonic masculinity norms (the predictor in Fig. 1.1 and mediator in Fig 1.2). In the validation study to the Portuguese population, internal consistency was separately evaluated for men and women, with the men's sample having a higher value of internal consistency ($\alpha = 0.68$) than the women's sample ($\alpha = 0.61$).

This reduced version contains seven subscales – Winning (e.g., "Winning is the only thing that matters"), Dominance (e.g., "I make sure people do as I say"), Risk-taking (e.g., "I like taking risks"), Disdain for homosexuals (e.g., "It would be horrible if someone thought I was gay"), Violence (e.g., "Sometimes, violent action is necessary"), Pursuit of status (e.g., "I would hate to be important" – reverse scored), and Playboy (e.g., "I would feel good if I had many sexual partners"). The total number of items was 14, with two items per subscale (five of which had reversed scoring). Participants were asked to rate, on a Likert scale of 1 ("Strongly disagree") to 4 ("Strongly agree"), how much they agreed with each of the items.

To assess the psychometric characteristics of this instrument in our sample, we conducted a principal axis factoring analysis with orthogonal rotation with the 14 items. In the final solution (Appendix A), 8 items were retained and 6 were removed, due to their low saturation and/or high cross loadings (differences between factor loading below 0.30). Four factors were extracted using the Kaiser criterion, accounting for 56.86% of the variance: Playboy/Playgirl, Disdain for Homosexuals, Risk-Taking and Violence. All factors presented acceptable internal consistency (Playboy/Playgirl: $r_{(S\text{-}B)} = 0.76$ in the men's sample, and $r_{(S\text{-}B)} = 0.66$ in the women's sample; Disdain for Homosexuals: $r_{(S\text{-}B)} = 0.74$ in the men's sample, and $r_{(S\text{-}B)} = 0.70$ in the women's sample; Risk-Taking: $r_{(S\text{-}B)} = 0.62$ in the men's sample, and

$r_{(S-B)} = 0.68$ in the women's sample; Violence: $r_{(S-B)} = 0.72$ in the men's sample, and $r_{(S-B)} = 0.62$ in the women's sample). Scores were computed by averaging the two items that compose each factor, with higher scores translating greater norm conformity.

2.3.2. Meat intake. In order to assess meat consumption frequency in a typical week, a question by Hoek, Luning, Weijzen, Engels, Kok, and de Graaf (2011), adapted by Graça, Calheiros, and Oliveira (2015) was included. The question was: "In a typical week, how many times do you eat a piece of red or processed meat?", and was followed by a description of what should be considered a piece of red or processed meat (a beef or pork palm-sized stake, or two slices of smoked meat, ham or bacon). There were five answering options, representing a progressive intake frequency: "Once a week or less", "Two to three times *per* week", "Four to five times *per* week", "Six to seven times *per* week" and "More than seven times *per* week".

2.3.3. Fruit and vegetable intake. Respondents' consumption of fruit and vegetables in a typical week was measured with two questions, one for fruit intake and another for vegetable intake, based on the work of Godinho, Alvarez, Lima and Schwarzer (2014).

Instructions were modified so as to consider fruit and vegetable intake in a typical week. It was also mentioned what should be considered as fruit portions (fruit itself and a glass of 100% fruit juice), and vegetable portions (soup, salad or a vegetable side dish, excluding potato). Both fruit and vegetable intake were measured in a seven-point scale, ranging from 1 ("Once a week or less") to 7 ("More than four times *per* day").

Fruit and vegetable consumption items were recoded in order to represent daily consumption (i.e., number of daily portions), and treated as metric variables.

2.4. Procedure

A questionnaire was built online, using Qualtrics platform. Two non-probabilistic sampling strategies were used to collect the data. First, a snowball sampling was used, whereby participants were asked to divulge the questionnaire to their acquaintances. Secondly, contacts were made through e-mail to City Halls, public libraries, both professional and volunteer firefighter corporations, Civil Protection departments, General-Secretariats of the Portuguese Ministries, police forces, private security companies, several branches of the Portuguese Armed Forces, trade unions, senior universities, and public transportation companies; these entities were asked to distribute the online questionnaire to their collaborators.

The data was collected from March 20 to May 10, 2016. The questionnaire was organised in three parts. The first part included the CMNI scale; the second part contained the gender salience manipulation condition (i.e., high vs. low), which were randomly displayed, and the third part contained the food consumption measures.

At the beginning of the questionnaire, informed consent was obtained, and information was provided about the general objective of the study, stating that the purpose was to "understand the relation between your attitudes and values, and your eating behaviour"; participation was voluntary and confidentiality of the collected data was also guaranteed, following the ethical guidelines approved by CIS-IUL, as well as the article 7 of the ethical code, relative to investigation on Psychology, of the Portuguese Board of Psychologists (Ordem dos Psicólogos Portugueses, 2011). The researcher's contact was given, in case participants had any doubts or suggestions, or wanted additional information about the study.

Before beginning the first part, sociodemographic data was collected in order to adapt the wording of the items to the respondent's sex.

After the manipulation check, a final question was included to verify the participants' blindness to the study's objective, "Do you think your answers to the first part of the questionnaire influenced your answers to the second part of the questionnaire?", to which participants could answer "No" or "Yes"; if this last option was selected, participants were asked to explain how they thought their answers to the food consumption measures were influenced by their answers to the first part of the questionnaire. Five participants were removed from the initial sample, since they had identified what the objective was.

Lastly, participants were thanked.

2.5. Data Analyses

All analyses were performed using SPSS Statistics 23 software. First, sociodemographic variables were analysed and a qualitative analysis of the relevant dietary restriction was made. T-tests and chi-square test were performed to determine if there were differences in the sociodemographic variables between participants who completed the questionnaire and participants who dropped out. T-tests were also used to compare both experimental groups of gender salience, and thus verify if the manipulation was effective.

Descriptive analyses of the dimensions of conformity to masculinity norms and the consumption items were performed, as well as Kolmogorov-Smirnov tests to infer normality of the distributions of the variables, and t-tests to verify if there were sex differences in the dimensions.

Then, the relations between the CMNI dimensions and consumption variables were assessed using Pearson correlations, separately for women and men, and for both gender salience conditions; Pearson correlation were used since the sample size is large, and the Central Limit Theorem can be applied (Field, 2009).

The correlations between the consumption items and sociodemographic variable were also analysed; correlations were computed separately for men and women. In the men's sample, vegetable consumption was significantly correlated with age ($r_{(179)} = -0.19$; $p = 0.01$). In the women's sample, meat consumption was also significantly correlated with age ($r_{(335)} = -0.15$; $p = 0.01$). Given these significant correlations, age was entered as a covariate in the multivariate regression models used to test the moderation of gender salience on the relation between adherence to masculinity norms and food consumption; in these analyses, the predictor – conformity to the Playboy norm – was centered, and the interaction term was constructed by multiplying the centered Playboy/Playgirl dimension variable by the condition variable. The centered variable, the interaction term and gender salience were then entered as predictors of vegetable consumption. The corresponding figure was computed using ModGraph (Jose, 2008).

Finally, mediation analyses were conducted, using the four steps proposed by Baron and Kenny (1986) and the Sobel test, to examine whether adherence to masculinity norms – namely, Violence and Playboy dimensions – mediated the relation between sex and meat and vegetable consumption, when in the high salience condition; age was also entered as a covariate in the mediation model.

Chapter III – Results

3.1. Manipulation Check

In the men's sample, there were statistically significant differences in the first manipulation check question – "To what degree did you feel that your masculinity/femininity was evaluated in this study?" – ($t_{(180)}$ = -2.35; p = 0.02), with the high salience group presenting a higher sense that their masculinity and femininity had been evaluated (M = 3.57; SD = 1.26) than the low salience group (M = 3.11; SD = 1.34). There were also statistically significant differences in the second manipulation check question – "To what degree did this questionnaire make you think about your masculinity/femininity?" – ($t_{(180)}$ = -2.12; p = 0.04), with the high salience group showing a higher level of thought about their masculinity and femininity (M = 2.40; SD = 1.10) than the low salience group (M = 2.05; SD = 1.16).

In the women's sample, however, there were no significant differences between the two conditions, both in the first ($t_{(335)}$ = -1.04, p = 0.30; low salience: M = 3.38; SD = 0.10; high salience: M = 3.53; SD = 0.10) and the second question ($t_{(335)}$ = -1.15, p= 0.25; low salience: M = 2.24; SD = 0.08; high salience: M = 2.38; SD = 0.09). Since there was no evidence that the manipulation of gender salience was effective for women, we have only tested the moderation hypothesis for men but not for women (see Figure 1 in the introduction chapter).

3.2. Descriptive Statistics

A table with the descriptive statistics of all items for the total sample is presented below (Table 1).

Table 1 - Descriptive statistics and normality tests of the variables for the total sample

Variables		Min	Max	Median	Mean	SD	Skewness/ S.E.	Kurtosis/ S.E.	KS (Sig.)
Masculinity norms	Playboy/Playgirl	1	4	1.50	1.62	0.62	7.85	2.16	0.00
	Disdain for homosexuals	1	4	2.00	2.24	0.70	2.05	-0.73	0.00
	Risk-taking	1	4	2.00	2.24	0.57	0.86	-0.07	0.00
	Violence	1	4	2.00	1.93	0.73	2.44	-4.25	0.00
Food consumption	Meat	1	5	2.00	2.17	0.98	6.36	0.45	0.00
	Fruit	0	5	2.00	1.81	1.30	3.85	-1.61	0.00
	Vegetables	0	5	1.00	1.45	1.27	8.22	3.41	0.00

Regarding the conformity to Masculinity Norms, all dimensions had the same range of answers, varying from 1 to 4. Both the Disdain for Homosexuals and the Risk-taking had the highest mean value; participants somewhat agreed with those norms. The lowest mean value was registered for the Playboy/Playgirl dimension, meaning that on average participants did not particularly conform with this norm. All dimensions' distributions were slightly positively skewed. Two dimensions had mesokurtic distributions (Disdain for homosexuals and Risk-taking), whilst the Playboy/Playgirl dimension had a leptokurtic distribution and the Violence dimension had a platykurtic distribution. Analysis of the Kolmogorov-Smirnov test revealed that none of the dimensions had a normal distribution.

As for the meat consumption, participants' answers varied between all answer options, from 1 ("Once a week or less") to 5 ("More than seven times *per* week"), with a modal value of 2 (corresponding to "Two to three times *per* week"). The distribution appeared to be positively skewed, with 50% of the distribution concentrating on the left side, and slightly leptokurtic.

Regarding fruit and vegetable consumptions, all answer options were chosen in both questions, and varied from 0 ("Does not consume daily") to 5 ("More than four times a day"). Fruit consumption had a modal value of 2 (which represented "Twice a day"); the distribution was positively skewed, and platykurtic. Vegetable consumption had a modal value of 1 (meaning that most participants chose the option "Once a day"), and the answer distribution to this variable was positively skewed and leptokurtic. For both items, Kolmogorov-Smirnov test indicated that none of the items had a normal distribution.

3.2.1. Sex differences in the Conformity to Masculinity Norms and Food Consumption. As presented in Table 2, there were statistically significant differences between men and women, with men presenting higher mean values of conformity to masculinity norms in all four factors – Playboy/Playgirl ($t_{(517)}$ = -11.53, $p < 0.01$), Disdain for Homosexuals ($t_{(339.38)}$ = -3.84, $p < 0.01$), Risk-Taking ($t_{(517)}$ = -6.64, $p < 0.01$), and Violence ($t_{(335.17)}$ = -5.68, $p < 0.01$).

Table 2 – Sex-related differences in the CMNI dimension and food consumption patterns

| | | Sex | | | |
| | | Men | | Women | |
		Mean	Std. Deviation	Mean	Std. Deviation
Masculinity norms	Playboy/Playgirl	2.01	0.62	1.41	0.52
	Disdain for homosexuals	2.40	0.73	2.16	0.66
	Risk-taking	2.46	0.54	2.12	0.55
	Violence	2.18	0.76	1.80	0.67
Food consumption	Meat consumption	2.35	0.96	2.08	0.98
	Fruit consumption	1.48	1.33	1.99	1.25
	Vegetable consumption	1.11	1.28	1.64	1.22

A t-test was performed to analyse if there were differences in meat consumption between men and women; indeed, men had a significantly higher mean of meat consumption than women ($t_{(517)} = -3.08$; $p < 0.01$). Also, women presented a higher mean value of daily frequency of consumption, both for fruit ($t_{(517)} = 4.30$, $p < 0.01$) and vegetables ($t_{(517)} = 4.60$, $p < 0.01$) than did men.

3.3. Correlations between adherence to masculinity norms and food consumption

The correlations between adherence to masculinity norms and food consumption indices are presented separately for men's and women's samples (Tables 3 and 4, respectively). For the men's sample these correlations are also presented separately for participants in the high and low gender salience conditions (Table 3). Since gender salience manipulation was not effective for women, Table 4 includes the intercorrelations for the total sample of female participants.

In the men's sample, the only significant correlation was found between vegetable consumption and the adherence to the Playboy norm, but only for men in the high gender salience condition. For these men, the more they adhered to the playboy norm the less they reported eating vegetables.

Table 3 – Correlations between CMNI dimensions and food consumption variables in the men's sample by gender salience conditions

Condition		Meat consumption	Fruit consumption	Vegetable consumption
Low salience	Playboy/Playgirl	0.03	0.01	0.07
	Disdain for homosexuals	0.12	-0.17	-0.12
	Risk-taking	0.06	0.05	0.09
	Violence	0.14	0.12	0.00
High salience	Playboy/Playgirl	-0.04	-0.13	**-0.24**[*]
	Disdain for homosexuals	0.18	-0.07	-0.04
	Risk-taking	0.14	-0.09	-0.13
	Violence	0.05	-0.09	-0.04

* $p \leq 0.05$.

As for women (Table 4), meat consumption had a significant positive association with the adherence to Violence norm, i.e., the more women adhered to the violence norm the more they reported eating meat.

Table 4 – Correlations between CMNI dimensions and food consumption variables in the women's sample

|	Meat consumption	Fruit consumption	Vegetable consumption
Playboy/Playgirl	0.04	-0.04	-0.07
Disdain for homosexuals	0.01	0.02	-0.04
Risk-taking	0.02	-0.01	0.00
Violence	**0.20**[*]	-0.01	0.09

* $p \leq 0.01$.

3.4. Moderation analysis

In order to test whether there is an effect of adherence to masculinity norms and food consumption moderated by gender salience (Figure 1), a linear regression analysis was performed for the men's sample.

The Playboy dimension was used since it correlated significantly with vegetable consumption in the men's sample. In the regression analysis, age was controlled for since it was significantly correlated to vegetable consumption; the model in which age was the only predictor was statistically significant, and accounted for 3% of the variance of vegetable consumption ($R^2_{adjusted} = 0.03$; $F_{(1, 179)} = 6.79$, $p = 0.01$).

Afterwards, adherence to Playboy norm and Gender salience were entered as predictors of vegetable consumption, as well as their interaction term. As compared to the previous model, this model accounted for more 35% ($\Delta R^2_{adjusted} = 0.04$; $F_{(4, 176)} = 3.39$, $p = 0.01$) of the variance of vegetable consumption. Neither the Playboy norm ($\beta = 0.06$; $t = 0.60$; $p = 0.55$) nor the gender salience ($\beta = 0.06$; $t = 0.77$; $p = 0.44$) alone were predictors of vegetable consumption; however, their interaction regression coefficient was negative and significant ($\beta = -0.21$; $t = -2.20$; $p = 0.03$). Figure 3 represents the decomposition of this interaction effect.

Figure 3 - Moderation effect of gender salience on the relationship between adherence to the Playboy norm and vegetable consumption in the men's sample
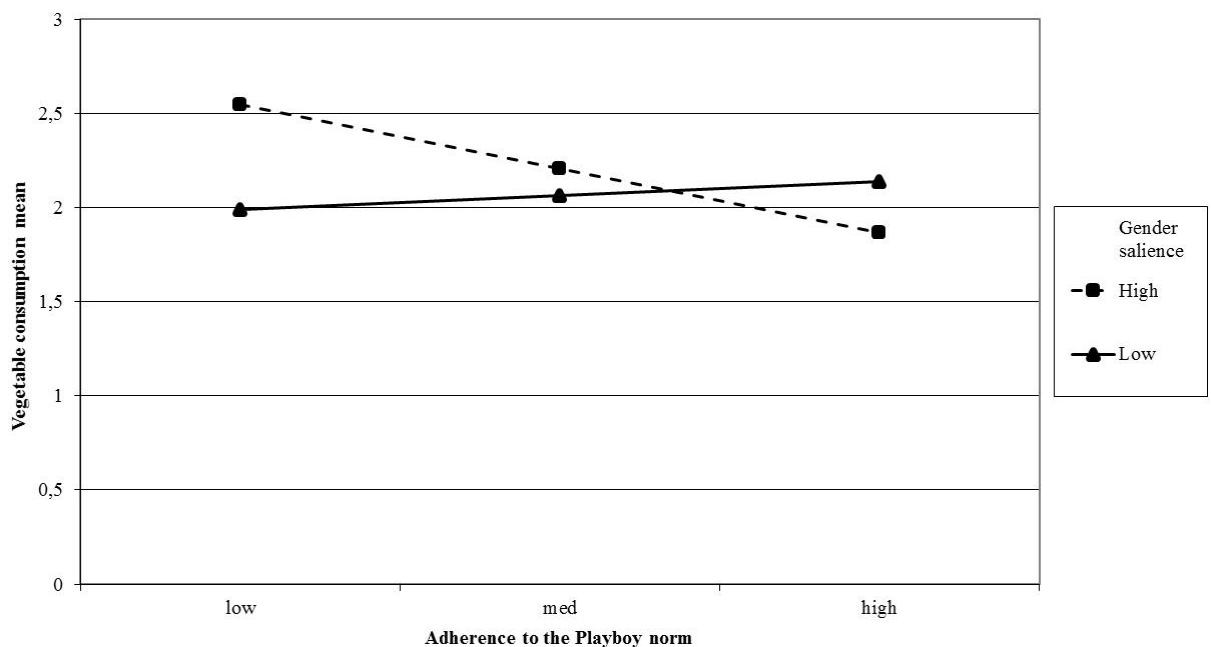
(Note: The medium value represents the mean of the adherence to the Playboy dimension, the low value represents the mean subtracting one standard deviation, and the high value represents the mean value adding one standard deviation.)

As shown in Figure 3, when in the high salience condition, men who have a higher level of adherence to the Playboy norm report less vegetable consumption (B = -0.55; p = 0.02).

Whereas, in the low salience condition this relationship is no longer significant (B = 0.12; p = 0.55).

3.5. Mediation analysis

Two mediation analyses were performed; the first to examine if adherence to the Violence norm mediated the relationship between sex and meat consumption, and the second to examine if adherence to the Playboy/Playgirl norm mediated the relation between sex and vegetable consumption. Both analyses were performed with men and women in the high salience condition.

Age was entered as a covariate in both mediation models; however, it was not a significant predictor in the mediation model regarding the violence dimension and meat consumption ($R^2_{adjusted} = 0.01$; $F_{(1,256)} = 3.40$; $p = 0.07$), nor in the mediation of the playboy dimension on the relation between sex and vegetable consumption ($R^2_{adjusted} = 0.01$; $F_{(1,256)} = 2.63$; $p = 0.11$).

In the first model, sex was regressed on meat consumption, showing that men have higher levels of meat consumption (since women were considered as the baseline category) ($\beta = 0.18$; t = 2.87; $p < 0.01$). Then, a regression of sex on the Violence dimension was computed, also showing that men had higher levels of adherence to the Violence dimension ($\beta = 0.24$; t = 4.01; $p < 0.01$). Lastly, sex and the Violence dimension were entered as predictors of meat consumption ($R^2_{adjusted} = 0.06$; $F_{(3, 254)} = 6.49$, $p < 0.01$), showing that adherence to the Violence norm predicted meat consumption ($\beta = 0.17$; t = 2.73; $p = 0.01$). Although there was a decrease in the effect of sex, it continued to be a significant predictor of meat consumption ($\beta = 0.13$; t = 2.15; $p = 0.03$), suggesting a partial mediation. Sobel test confirms that the adherence to the violence norm partially mediated the relation between sex and meat consumption (Sobel z = 2.26; $p = 0.02$).

In the second tested model, sex and the Playboy/Playgirl dimension were regressed on vegetable consumption. First, sex was regressed on vegetable consumption, showing that women had significantly higher levels of vegetable consumption ($\beta = -0.23$; t = -3.80; $p < 0.01$). Next, sex was regressed on the Playboy/Playgirl dimension, indicating that men had higher adherence to the Playboy/Playgirl norm than women ($\beta = 0.52$; t = 9.82; $p < 0.01$). The last regression model was then computed, with sex and the Playboy/Playgirl dimension entered as predictors of vegetable consumption ($R^2_{adjusted} = 0.06$; $F_{(3, 254)} = 6.40$, $p < 0.01$); while sex still held its effect on vegetable consumption ($\beta = -0.17$; t = -2.42; $p = 0.02$), the effect of the Playboy/Playgirl dimension was no longer significant ($\beta = -0.11$; t = -1.49; $p =$

0.14). Given this result, mediation of the Playboy/Playgirl dimension in the relation between sex and vegetable consumption was not confirmed.

Chapter IV – Discussion

This study had the general purpose of examining the role of prescriptive masculinity norms in food consumption. Particularly, we aimed to explore the association between the conformity to masculinity norms and meat, fruit and vegetable consumption, and if this association was influenced by a context where gender was salient (see Figure 1 in the introduction); we also intended to investigate whether the conformity to masculinity norms would account for sex-related differences in food consumption (see Figure 2 in the introduction).

In relation to the moderation model (Figure 1), we hypothesised that, when gender was contextually salient, the relation between the conformity to masculinity norms and food consumption would be stronger, i.e., higher conformity to masculinity norms would be more strongly associated with more frequent meat consumption and lower intake of fruits and vegetables. As expected, and in line with the model of gender-in-context (Deaux & Major, 1987), in the men's sample, when gender was salient, participants who had higher levels of conformity to the playboy norm reported significantly lower vegetable consumption; this relation did not hold when gender was not contextually salient. These findings suggest that the relation between the conformity to masculinity norms and food consumption is not constant, but context-dependent. Relating this result with the literature on impression-management goals in food consumption, we can also conclude that, in men who conform with the playboy norm, gender salience will play an important role in food choice; in contexts where it is important to convey an impression congruent with the masculinity stereotype, man will distance themselves from foods typically associated to femininity, as is the case of vegetables (Baker & Wardle, 2003).

No other results were found concerning the other three dimensions of masculinity norms present in the study (disdain for homosexuals, risk-taking and violence). First, as regards the disdain for homosexual norms, these results may suggest that participants who conformed more to this norm felt no need to assert their sexuality through their food intake report, which would explain the lack of results concerning this dimension. However, it was expected that the risk-taking norm would have a greater impact on food consumption report (e.g., higher meat intake), since this norm is related to health-risk behaviours (Mahalik et al., 2003); this absence of results could be accounted for by the low internal consistency that this dimension had on the men's sample. Lastly, the violence norm may have not presented significant results in the men's sample due to the relatively low mean of adherence to this norm; despite the fact that violence is much more tolerated within men, its mean of

conformity is the second lowest of all norms' means. This may be accounted for social desirability concerns of the participants.

Unfortunately, it was not possible to test the effect of gender salience on the relation between conformity to masculinity norms and food consumption among women, since the manipulation of gender salience was not effective with this sample. Women may be influenced by the fact that men are viewed as the norm, and women as the exception (Amâncio & Oliveira, 2006), which may make gender more salient, across all social contexts, to women than to men. Thus, our manipulation of gender context may have been not strong enough to elicit this concept in women; despite the fact that women's answers to the manipulation check questions are higher in the high salience condition, the difference among the two conditions is not statistically significant, which supports our assumption that, for women, gender is salient by default. Nonetheless, in the women's sample, there was a positive correlation between the conformity to the violence norm and meat consumption; this association seems to hold relevant implications. Amâncio (1993) studied the stereotypical representations of men and women in the Portuguese society, finding that, while "authoritarian" and "dominant" were considered masculine traits, "affable", "tender", "sensitive" and "fragile" were seen as feminine traits, suggesting a submissive dimension in the feminine stereotype; since violence is such a non-normative concept for women, the conformity to a traditional masculinity norm, such as the violence norm, may bring to consciousness the fact that meat is a food traditionally linked to masculinity, and thus heighten its intake report. They may also view meat as a way to express their masculinity, by adopting a behaviour typically associated with its norms (Courtenay, 2000). In this way, we can explain the positive association between women who show a greater conformity to masculinity norms, and a tendency to report more meat consumption. This result also shows that there are differences, across women, in relation to their degree of conformity to masculinity norms; however, since interventions relating to food consumption (particularly excess of meat consumption and insufficient fruit and vegetable intake) may target mostly men, since this consumption pattern, as discussed before, is considered typically male, women who conform with the masculinity norms may be at a greater risk of health problems such as colorectal cancer, type 2 diabetes or cardiovascular disease.

In relation to the mediation model (see Figure 2), our analyses confirmed that there are sex differences in meat consumption: in line with the literature on sex-related differences in food consumption (Roos, Lahelma, Virtanen, Prättälä, & Pietinen, 1998; Fagerli & Wandel, 1999; Baker & Wardle, 2003; Wardle et al., 2004), there were different consumption patterns

between men and women: while women reported a higher frequency of fruit and vegetable consumption, men reported a higher frequency of meat consumption. (which goes in line with the findings of Beardsworth et al., 2002, and Prättälä et al., 2007). It was also confirmed that men have higher levels of conformity to masculinity norms than women in all dimensions, a result that is congruent with other studies on this matter (Mahalik et al., 2003; Owen, 2011; Leitão, 2015). The greatest differences between men's and women's means of conformity were observed in the playboy and the violence norms, which may explain the fact that these two norms presented stronger associations with food consumption. Furthermore, the violence dimension was the only norm that mediated the relation between sex and meat consumption. This suggests that, although sex, by itself, is an important predictor of meat consumption, their relation can be partially accounted for by prescriptive gender norms; men's significantly higher meat intake is not only explained by their sex, but also by their significantly higher conformity to the masculinity norm of violence. Conversely, women's lower meat consumption can also be related to their lower conformity to the violence norm.

Despite the fact that the playboy norm significantly correlated with vegetable consumption, its inability to account for the sex differences in this food's intake may be explained by the low conformity of women to this norm, also found in other studies (Cuéllar-Flores, Sánchez-López, Dresch, 2011; Owen, 2011).

4.1. Limitations and future research

While these results represent an important step in understanding the role of prescriptive gender norms and gender salience in food consumption, there are some limitations to be reckoned.

First, not all dimensions produced the expected results. This might be explained by the lower internal consistency of the masculinity norm measure in the present sample – although this measure had generally corroborated the original results in a Spanish sample (Cuéllar-Flores, Sánchez-López, Dresch, 2011). The fact that this measure of conformity to masculinity norms was not adequate to this sample, may have limited the study of how different norms affect men's and women's food consumption behaviours.

Results may have also been affected by the food consumption measures that asked for past consumption instead of future intentions of consumption. Although questions about past consumption may generally be influenced by participants' desire to portrait themselves in a positive way, they may not be as permeable to manipulation as future intention questions, since participants were asked to remember their consumption patterns, instead of how they

intend to behave in the future. In future studies, it would be interesting to verify if future intentions questions hold similar results.

It would also be important to further investigate how gender salience influences women's food intake; as it was mentioned earlier, gender stereotypes are not equally present in men and women; since being a woman is always salient (Amâncio, 1993), it would have been necessary to produce a stronger manipulation of gender salience in women; this study failed to do so, but, in future studies, this would be a relevant question to address.

Given that this was a correlational study, we cannot interpret these findings as relations of causality between the conformity to masculinity norms and food consumption. The size of the effects can also be a constrain to their interpretation, since they may be too small to be generalized; reinforcing the ecological validity of the results, by using different dependent variables and a stronger manipulation of the gender salience, would be an asset to future studies.

Despite the limitations of this study, it represents a first step in understanding how prescriptive masculinity norms affect food consumption, and its results corroborate that there are differences in food consumption between men and women; however, sex is not the only variable at play, and gender takes a partial but significant role in food consumption, through gender norms and contextual salience.

Firstly, it is vital to broaden the study of food consumption patterns to men; as discussed earlier, a great deal of literature concerning food consumption focuses exclusively on women; moreover, literature has mostly focused on describing differences in consumption patterns. In this study, we aimed to go beyond descriptive norms, and try to understand how gender stereotypes, through the conformity to gender norms, actually affect people's behaviours.

Secondly, by studying masculinity norms' effect, not only on men's, but also on women's behaviour, this study contributes to the understanding that gender is a continuum, and that masculinity (and femininity) norms can affect both men and women, since there are differences in their adherence not only between men and women, but also among men and women. This finding can have an important impact on the designing of interventions targeted to promote healthier food consumption patterns; it would be crucial, in our point of view, to understand whether our findings can extend to other health behaviours.

In conclusion, while there are sex-related differences in food consumption, gender has an important role in explaining them, and social context is determinant in this relation.

References

Amâncio, L. (1992). As assimetrias nas representações de género. *Revista Crítica de Ciências Sociais*, *34*.

Amâncio, L. (1993). Género - Representações e identidades. *Sociologia - Problemas E Práticas*.

Amâncio, L., & Oliveira, J. M. De. (2006). Men as individuals, women as a sexed category: Implications of symbolic asymmetry for feminist practice and feminist Psychology. *Feminism & Psychology*, *16*(1), 35–43. http://doi.org/10.1177/0959-353506060818

Baker, A. H., & Wardle, J. (2003). Sex differences in fruit and vegetable intake in older adults. *Appetite*, *40*(3), 269–275. http://doi.org/10.1016/S0195-6663(03)00014-X

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.

Barreto, M., & Ellemers, N. (2013). Sexism in contemporary societies: How it is expressed, perceived, confirmed, and resisted. In M. K. Ryan & N. R. Branscombe (Eds.), *The SAGE handbook of gender and Psychology* (pp. 289–305). London: SAGE Publications. http://doi.org/10.4135/9781446269930

Basow, S. A. (2010). Gender in the classroom. In J. C. Chrisler & D. R. McCreary (Eds.), *Handbook of gender research in Psychology* (pp. 277-295). New York: Springer.

Basow, S., & Kobrynowicz, D. (1993). What is she eating? The effects of meal size on impressions of a female eater. *Sex Roles*, *28*, 335–344. http://doi.org/10.1007/BF00289889

Beardsworth, A., Bryman, A., Keil, T., Goode, J., Haslam, C., & Lancashire, E. (2002). Women, men and food: the significance of gender for nutritional attitudes and choices. *British Food Journal*, *104*(7), 470–491. http://doi.org/10.1108/00070700210418767

Beer-Borst S, Hercberg S, Morabia A, Bernstein MS, Galan P, Galasso R, Giampaoli, S., McCrum, E., Panico, S., Preziosi, P., Ribas, L., Serra-Majem, L., Vescio, M. F., Vitek, O., Yarnell, J., & Northridge ME. (2000). Dietary patterns in six European populations: results from EURALIM, a collaborative European data harmonisation and information campaign. *European Journal of Clinical Nutrition*, *54*(253–262), 253–263.

Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology*, *42*(2), 1S5–162. http://doi.org/10.1037/h0036215

Bernardes, S. F., Keogh, E., & Lima, M. L. (2008). Bridging the gap between pain and gender research: A selective literature review. *European Journal of Pain*, *12*, 427–440. http://doi.org/10.1016/j.ejpain.2007.08.007

Boada, L. D., Henríquez-Hernández, L. A., & Luzardo, O. P. (2016). The impact of red and processed meat consumption on cancer and other health outcomes: Epidemiological evidences. *Food and Chemical Toxicology*, *92*, 236–244. http://doi.org/10.1016/j.fct.2016.04.008

Bock, B. C., & Kanarek, R. B. (1995). Women and men are what they eat: The effects of gender and reported meal size on perceived characteristics. *Sex Roles*, *33*, 109–119. http://doi.org/10.1007/BF01547938

Bussey, K., & Bandura, A. (1999). Social Cognitive Theory of gender development and differentiation. *Psychological Review*, (106), 676–713.

Cialdini, R. B., Demaine, L. J., Sagarin, B. J., Barrett, D. W., Rhoads, K., & Winter, P. L. (2006). Managing social norms for persuasive impact. *Social Influence*, *1*(1), 3–15. http://doi.org/10.1080/15534510500181459

Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A Focus Theory of Normative Conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 24, pp. 201-234). San Diego, CA: Academic Press.

Cialdini, R., Reno, R., & Kallgren, C. (1990). A Focus Theory of Normative Conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*, 1015–1026.

Connell, R. W. (1995) *Masculinities.* Cambridge: Polity Press.

Connell, R. (1997). Men, masculinities and feminism. *Social Alternatives*, *16*(3), 7–10. http://doi.org/10.1057/9781137005731

Connell, R. W., & Messerschmidt, J. W. (2005). Hegemonic masculinity: Rethinking the concept. *Gender & Society*, *19*(6), 829–859. http://doi.org/10.1177/0891243205278639

Conner, M., & Armitage, C. J. (2002). Food and social influence. In M. Conner & C. J. Armitage (Eds.), *The social psychology of food* (pp. 114-132). Buckingham: Open University Press.

Courtenay, W. H. (2000). Constructions of masculinity and their influence on men's well-being: A theory of gender and health. *Social Science and Medicine*, *50*(10), 1385–1401. http://doi.org/10.1016/S0277-9536(99)00390-1

Crawford, M., & Unger, R. (2004). Images of women and men. In *Women and Gender: A feminist psychology*. http://doi.org/10.1002/9780470998496.ch9

Cuéllar-Flores, I., Sánchez-López, M. D., & Dresch, V. (2011). El inventario de conformidad con las normas de género masculinas (CMNI) en la población española. *Anales de Psicologia*, *27*(1), 170–178.

Deaux, K. (1985). Sex and gender. *Annual Review of Psychology*, *36*(1), 49–81. http://doi.org/10.1146/annurev.psych.36.1.49

Deaux, K., & Major, B. (1987). Putting gender into context: An interactive model of gender-related behavior. *Psychological Review*, *94*(3), 369–389. http://doi.org/10.1037/0033-295X.94.3.369

De Castro, J. M. (1995). The relationship of cognitive restraint to the spontaneous food and fluid intake of free-living humans. *Physiology and Behavior*, *57*(2), 287–295. http://doi.org/10.1016/0031-9384(94)00229-X

De Souza, P., & Ciclitira, K. (2005). Men and dieting: A qualitative analysis. *Journal of Health Psychology*, *10*(6), 793–804. http://doi.org/10.1177/1359105305057314

Diekman, A. B., & Goodfriend, W. (2006). Rolling with the changes: A role congruity perspective on gender norms. *Psychology of Women Quarterly*, *30*(4), 369–383. http://doi.org/10.1111/j.1471-6402.2006.00312.x

Direcção-Geral da Saúde. (2015). *A Saúde dos Portugueses. Perspectiva 2015*.

Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review*, *109*(3), 573–598. http://doi.org/10.1037/0033-295X.109.3.573

Fagerli, R. a, & Wandel, M. (1999). Gender differences in opinions and practices with regard to a "healthy diet." *Appetite*, *32*(2), 171–190. http://doi.org/10.1006/appe.1998.0188

Field, A. P. (2009). *Discovering statistics using SPSS: and sex and drugs and rock 'n' roll* (3rd ed.). London: Sage Publications.

Godinho, C. A., Alvarez, M. J., Lima, M. L., & Schwarzer, R. (2014). Will is not enough: Coping planning and action control as mediators in the prediction of fruit and vegetable intake. *British Journal of Health Psychology*, *19*(4), 856–870. http://doi.org/10.1111/bjhp.12084

Gough, B. (2007). "Real men don't diet': An analysis of contemporary newspaper representations of men, food and health. *Social Science and Medicine*, *64*(2), 326–337. http://doi.org/10.1016/j.socscimed.2006.09.011

Graça, J., Calheiros, M. M., & Oliveira, A. (2015). Attached to meat? (Un)Willingness and intentions to adopt a more plant-based diet. *Appetite*, *95*, 113–125. http://doi.org/10.1016/j.appet.2015.06.024

Grunberg, N. E., & Straub, R. O. (1992). The role of gender and taste class in the effects of stress on eating. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, *11*(2), 97–100. http://doi.org/10.1037/0278-6133.11.2.97

Herman, C. P., Roth, D. A., & Polivy, J. (2003). Effects of the presence of others on food intake: A normative interpretation. *Psychological Bulletin*, *129*(6), 873–886. http://doi.org/10.1037/0033-2909.129.6.873

Instituto Nacional de Estatística, & Instituto Nacional de Saúde Doutor Ricardo Jorge. (2009). *Inquérito Nacional de Saúde 2005/2006*.

Jose, P.E. (2013). *ModGraph-I: A programme to compute cell means for the graphical display of moderational analyses: The internet version, Version 3.0*. Victoria University of Wellington, Wellington, New Zealand. Retrieved from http://pavlov.psyc.vuw.ac.nz/paul-jose/modgraph/

Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A Focus Theory of Normative Conduct: When norms do and do not affect behavior. *Personality and Social Psychology Bulletin*, *26*(8), 1002–1012. http://doi.org/10.1177/01461672002610009

Kimura, A., Wada, Y., Goto, S. I., Tsuzuki, D., Cai, D., Oka, T., & Dan, I. (2009). Implicit gender-based food stereotypes. Semantic priming experiments on young Japanese. *Appetite*, *52*(2), 521–524. http://doi.org/10.1016/j.appet.2008.11.002

Lee, C., & Owens, R. G. (2002). *The psychology of men's health*. Buckingham: Open University Press.

Leitão, C. F. (2015). *Comportamentos de risco na juventude: Uma perspetiva de género e interseccional*. Universidade do Minho. Retrieved from http://repositorium.sdum.uminho.pt/handle/1822/40781

Levant, R. F., Hall, R. J., Weigold, I. K., & McCurdy, E. R. (2015). Construct distinctiveness and variance composition of multi-dimensional instruments: Three short-form masculinity measures. *Journal of Counseling Psychology*, *62*(3), 488–502. http://doi.org/10.1037/cou0000092

Mahalik, J. R., Locke, B. D., Ludlow, L. H., Diemer, M. a., Scott, R. P. J., Gottfried, M., & Freitas, G. (2003). Development of the Conformity to Masculine Norms Inventory. *Psychology of Men & Masculinity*, *4*(1), 3–25. http://doi.org/10.1037/1524-9220.4.1.3

Matos, M. G. de, Simões, C., Camacho, I., Reis, M., & Equipa Aventura Social. (2015). *A saúde dos adolescentes portugueses em tempos de recessão - Dados nacionais 2014*.

McCreary, D. R., & Chrisler, J. C. (2010). Introduction. In J. C. Chrisler & D. R. McCreary (Eds.), *Handbook of gender research in Psychology* (pp. 1-16). New York: Springer.

Mori, D., Chaiken, S., & Pliner, P. (1987). "Eating lightly" and the self-presentation of femininity. *Journal of Personality and Social Psychology*, *53*(4), 693–702. http://doi.org/10.1037/0022-3514.53.4.693

Oliveira, J. M. De, & Amâncio, L. (2002). Liberdades condicionais: O conceito de papel sexual revisitado. *Sociologia - Problemas E Práticas*, *40*, 45–61.

O'Neil, J. M., Helms, B. J., Gable, R. K., David, L., & Wrightsman, L. S. (1986). Gender-role conflict scale: College men's fear of femininity. *Sex Roles*, *14*(5–6), 335–350. http://doi.org/10.1007/BF00287583

Ordem dos Psicólogos Portugueses. (2011). Código Deontológico da Ordem dos Psicólogos Portugueses. Retrieved from https://www.ordemdospsicologos.pt/pt/cod_deontologico

Owen, J. (2011). Assessing the factor structures of the 55- and 22-item versions of the Conformity to Masculine Norms Inventory. *American Journal of Men's Health*, *5*(2), 118–28. http://doi.org/10.1177/1557988310363817

Parent, M. C., & Moradi, B. (2011). An abbreviated tool for assessing conformity to masculine norms: Psychometric properties of the Conformity to Masculine Norms Inventory-46. *Psychology of Men & Masculinity*, *12*(4), 339–353. http://doi.org/10.1037/a0021904

Pliner, P., Bell, R., Hirsch, E. S., & Kinchla, M. (2006). Meal duration mediates the effect of "social facilitation" on eating in humans. *Appetite*, *46*(2), 189–198. http://doi.org/10.1016/j.appet.2005.12.003

Prättälä, R., Paalanen, L., Grinberga, D., Helasoja, V., Kasmel, A., & Petkeviciene, J. (2007). Gender differences in the consumption of meat, fruit and vegetables are similar in Finland and the Baltic countries. *The European Journal of Public Health*, *17*(5), 520–525. http://doi.org/10.1093/eurpub/ckl265

Rochelle, T. L., & Yim, K. H. (2015). Assessing the factor structure of the Chinese Conformity to Masculine Norms Inventory. *The Journal of Psychology*, *149*(1), 29–41. http://doi.org/10.1080/00223980.2013.837023

Rolls, B. J., Fedoroff, I. C., & Guthrie, J. F. (1991). Gender differences in eating behavior and body weight regulation. *Health Psychology*, *10*(2), 133–142. http://doi.org/10.1037/0278-6133.10.2.133

Roos, E., Lahelma, E., Virtanen, M., Prättälä, R., & Pietinen, P. (1998). Gender, socioeconomic status and family status as determinants of food behaviour. *Social Science and Medicine*, *46*(12), 1519–1529. http://doi.org/10.1016/S0277-9536(98)00032-X

Ruby, M. B. (2012). Vegetarianism. A blossoming field of study. *Appetite*, *58*(1), 141–150. http://doi.org/10.1016/j.appet.2011.09.019

Schofield, T., Connell, R. W., Walker, L., Wood, J. F., & Butland, D. L. (2000). Understanding men's health and illness: a gender-relations approach to policy, research, and practice. *Journal of American College Health*, *48*, 41–46.

Sigirci, O., Kniffin, K. M., & Wansink, B. (2014). Eating together: Men eat heavily in the company of women. *Journal of Nutrition Education and Behavior*, *46*(4, Supplement), S105–S106. http://doi.org/http://dx.doi.org/10.1016/j.jneb.2014.04.030

Stein, R. I., & Nemeroff, C. J. (1995). Moral overtones of food: Judgments of others based on what they eat. *Personality and Social Psychology Bulletin*, *21*(5), 480–490. http://doi.org/10.1177/0146167295215006

Stoller, R. J. (1974). *Sex and gender: The development of masculinity and femininity*. London: Karnac Books Ltd. Retrieved from http://books.google.co.uk/books/about/Sex_and_Gender.html?id=N20pcltSHUgC&pgis=1

Unger, R. K. (1979). Toward a redefinition of sex and gender. *American Psychologist*, *34*(11), 1085－1094. http://doi.org/10.1037/0003-066X.34.11.1085

Wardle, J., Haase, A. M., Steptoe, A., Nillapun, M., Jonwutiwes, K., & Bellisle, F. (2004). Gender differences in food choice: the contribution of health beliefs and dieting. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, *27*(2), 107–116. http://doi.org/10.1207/s15324796abm2702_5

West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender & Society*, *1*(2), 125–151. Retrieved from http://links.jstor.org/sici?sici=0891-2432(198706)1:2<125:DG>2.0.CO;2-W

Wood, W., & Eagly, A. H. (2009). Gender. *Handbook of Social Psychology*, 629–667.

World Health Organization. (2003). *Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation*. *World Health Organization Technical Report Series* (Vol. 916). Retrieved from http://eutils.ncbi.nlm.nih.gov/entrez/eutils/elink.fcgi?dbfrom=pubmed&id=12768890&retmode=ref&cmd=prlinks\npapers3://publication/uuid/734F6B31-260B-4545-A8E4-57F7D35DDEB8

World Health Organization. (2016). World Health Statistics 2016. Monitoring Health for the SDGs. Retrieved from http://www.who.int/gho/publications/world_health_statistics/EN_WHS08_Full.pdf

Appendix A

Principal axis factoring analysis of the CMNI (orthogonal rotation): factor scores, explained variance and internal consistency.

Conformity to Masculinity Norms Inventory

	Factors			
	Playboy/ Playgirl	Disdain for homosexuals	Violence	Risk-taking
If I could, I would frequently change sex partners	.769			
I would feel good if I had sex with a lot of different people	.764			
It would be horrible if someone thought I was gay		.763		
It is important for me that people think of me as heterosexual		.741		
I believe that violence is never justifiable			-.782	
Sometimes, violent action is necessary			.632	
I like taking risks				.736
In general, I do not like risky situations				-.699
Explained variance (%)	15.56	14.47	13.48	13.36
r(S-B)	0.77	0.72	0.69	0.68

Note: factor loadings below 0.30 were excluded from the table.