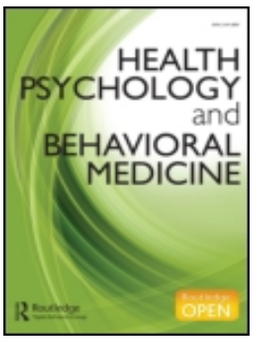

Routledge
Taylor & Francis Group

Health Psychology and Behavioral Medicine

An Open Access Journal

ISSN: (Print) 2164-2850 (Online) Journal homepage: http://www.tandfonline.com/loi/rhpb20

Healthy eaters beat unhealthy eaters in prototype evaluation among men, but abstinence may pose a risk for social standing

Marja Kinnunen, Nelli Hankonen, Ari Haukkala, Britta Renner, Piia Jallinoja, Clarissa M. L. Bingham & Pilvikki Absetz

To cite this article: Marja Kinnunen, Nelli Hankonen, Ari Haukkala, Britta Renner, Piia Jallinoja, Clarissa M. L. Bingham & Pilvikki Absetz (2015) Healthy eaters beat unhealthy eaters in prototype evaluation among men, but abstinence may pose a risk for social standing, Health Psychology and Behavioral Medicine, 3:1, 323-336, DOI: 10.1080/21642850.2015.1095097

To link to this article: http://dx.doi.org/10.1080/21642850.2015.1095097

Published online: 19 Oct 2015.

Health Psychology and Behavioral Medicine, 2015
Vol. 3, No. 1, 323–336, http://dx.doi.org/10.1080/21642850.2015.1095097

Taylor & Francis
Taylor & Francis Group

Healthy eaters beat unhealthy eaters in prototype evaluation among men, but abstinence may pose a risk for social standing

Marja Kinnunen[a*], Nelli Hankonen[b,c], Ari Haukkala[c], Britta Renner[d], Piia Jallinoja[a,e], Clarissa M. L. Bingham[a,f] and Pilvikki Absetz[a,g]

[a]*Welfare and Health Promotion Unit, National Institute for Health and Welfare, Helsinki, Finland;* [b]*Department of Social Psychology, School of Social Sciences and Humanities, University of Tampere, Tampere, Finland;* [c]*Department of Social Research/Social Psychology, University of Helsinki, Helsinki, Finland;* [d]*Department of Psychology, University of Konstanz, Konstanz, Germany;* [e]*Consumer Society Research Center (KTK), Department of Political and Economic Studies, University of Helsinki, Helsinki, Finland;* [f]*Cancer Society of Finland, Helsinki, Finland;* [g]*School of Health Sciences, University of Tampere, Helsinki, Finland*

(*Received 28 January 2015; accepted 14 September 2015*)

Although previous studies have shown that unhealthy eating is associated with a positive image of a typical unhealthy eating peer (prototype), their focus on prototypes is typically narrow/limited. The present study addresses this gap in the literature and investigates two aspects in peer evaluations: (1) healthy vs. unhealthy and (2) abstainer vs. chooser. Moreover, their mean differences, interrelationships and associations with eating behavior will be examined. *Methods*: Men in military service ($N = 1824$, Age M = 19.8) reported their eating behaviors and evaluated either (a) Vegetable chooser and Vegetable abstainer prototypes ($N = 920$) or b) Fat chooser and Fat abstainer prototypes ($N = 904$) on a scale containing 17 antonyms. Exploratory and confirmatory factor analyses suggested a three-factor structure: Self-regulation, Social standing in peer group and Appearance (Comparative Fit Indexes 0.82–0.87; Tucker–Lewis index 0.78–0.84; Root Mean Square Error of Approximation 0.07–0.08). *Results*: Healthy eaters (i.e. Vegetable chooser and Fat abstainer) were evaluated higher on Self-regulation and Appearance than respective unhealthy eaters (i.e. Vegetable abstainer and Fat chooser) ($ps < .001$). However, Fat abstainer was rated lower than Fat chooser on Social standing in peer group ($p < .001$). Neither Fat chooser nor Fat abstainer prototype was associated with fatty food consumption. Fruit and vegetable consumption was associated with higher Self-regulation ratings for Vegetable chooser ($\beta = .10$, $p < .01$) and lower Self-regulation ratings ($\beta = -.13$, $p < .001$) and Appearance ratings ($\beta = -.08$, $p < .05$) for Vegetable abstainer. *Conclusions*: Among young men, healthy eating peers are evaluated as more self-regulative and better looking than unhealthy eating peers. Rating healthy eaters more positively is related to higher fruit and vegetable consumption. Prototypes play a role in young men's eating behavior, although the role differs for vegetables and fatty foods. Interventions to increase fruit and vegetable consumption should consider addressing the vegetable eater prototype.

Keywords: prototypes; social image; eating behavior; food choice; peers

*Corresponding author. Email: marja.kinnunen@thl.fi

1. Introduction

The consumption of fruits and vegetables among young men is infrequent and far from the national recommendation's minimum of 500 g per day (Bingham et al., 2010; National Nutrition Council, 2005). Eating behavior is driven by biological needs such as satisfying hunger. Nonetheless, food choices are also dependent on cultural and social norms (Stead, McDermott, MacKintosh, & Adamson, 2011) and also provide a way to express group membership like ethnicity or social class, and thus, need to be examined from wider perspectives. Understanding the antecedents of healthy and unhealthy food consumption would enable evidence-based intervention design.

An influential theoretical framework depicting social influences on health-related behavior is the prototype-willingness model, emphasizing the role of prototypes in the decision-making process. Prototypes are defined as social images of a typical peer who engages in certain behavior (e.g. "a typical smoker of your age") (Gibbons & Gerrard, 1995; Hahn & Renner, 1998). According to the model, positive or negative valence of the prototype predicts the willingness to engage in the respective behavior. Two recent meta-analyses have shown support for the prototype-willingness model (Todd, Kothe, Mullan, & Monds, 2014; van Lettow, de Vries, Burdorf, & van Empelen, 2014). One of the strengths of the prototype-willingness model is the investigation of the social impact of peers upon behavior through social images (rather than direct self-reported influence). Van Lettow et al.'s (2014) meta-analysis shows that prototypes have effect not only on intention and willingness, but on behavior as well. For example, young smokers tend to evaluate a typical peer smoker more positively than a non-smoker (Piko, Bak, & Gibbons, 2007). Also, a more positive perception of a typical peer drinker predicts higher willingness to drink in social situations (Zimmermann & Sieverding, 2011) as well as actual alcohol consumption (Gerrard et al., 2002).

Studies exploring social images of healthy and unhealthy eaters show that healthy eaters are generally perceived more positively compared to unhealthy eaters (Barker, Tandy, & Stookey, 1999; Gerrits, de Ridder, de Wit, & Kuijer, 2009; Gerrits et al., 2010; Oakes & Slotterback, 2005). When asked to describe typical healthy eaters, people generally give positive descriptions, but also tend to associate some negative characteristics with healthy eaters. While healthy eaters are described with virtuous self-regulative characteristics like "active" (Gerrits et al., 2009), "dutiful" and "self-controlled" (Barker et al., 1999), they are also perceived as "self-centered" (Fries & Croyle, 1993). Unhealthy eaters in turn get more negative descriptions related to their appearance, for example, "chubby", but are also perceived positively with characteristics, for example, "sociable", "entertaining" and "masculine" (Fries & Croyle, 1993; Gerrits et al., 2009; Oakes & Slotterback, 2005). Gender differences in the perceptions of the prototype content have not always been found, (Gerrtits et al., 2009), but male adolescents have been found to hold more positive unhealthy eater prototypes and more negative healthy eater prototypes (Steinhilber, Fuchs, & Dohnke, 2013).

The associations of eater prototypes and eating seem to be complex, although several studies have shown a positive relationship between positive prototypes of unhealthy eater and related eating behaviors (Barker et al., 1999; Gerrits et al., 2009, 2010). For example, gender seems to moderate the effect of eater prototypes on eating behaviors. Prototype perception partially explains gender differences in eating among adolescents, especially among older age adolescents (Steinhilber et al., 2013). Also, favorable images of unhealthy eaters associate with higher fatty food consumption among girls, but with higher soft drink consumption among boys (Gerrits et al., 2009).

Dohnke, Steinhilber, and Fuchs (2015) tested the full prototype-willingness model on eating behavior and found that among adolescents, only the unhealthy eater prototype was associated

with eating. The unhealthy eater prototypes predicted subsequent unhealthy eating, and not only through intention and willingness as the model predicts, but also directly. This finding is actually in line with van Lettow et al.'s (2014) finding that health-risk prototypes generally exhibit stronger associations with outcome variables than health-protective prototypes (van Lettow et al., 2014). In terms of eating, similarly favorable images of healthy eaters have not always been found to relate to one's own food choices (Gerrits et al., 2009), probably because healthy eaters tend to get positive ratings not only from other healthy eaters but from unhealthy eaters as well (Barker et al., 1999).

So far, the question in literature has been whether and how prototypes influence the healthiness of eating behavior. However, Rivis, Sheeran, and Armitage (2006) noted that prototypes could actually refer either to a typical person engaging in a behavior (actors) or to a typical person abstaining from performing a certain behavior (abstainers). Hence, prototypes can be inhibitory (i.e. not wanting to be like a typical peer who avoids healthy foods) or facilitating (i.e. wanting to gain the favorable characteristics of the healthy food choosing peer). Combining the different types of prototypes, four prototype dimensions can be distinguished: (1) *risky behavior actor prototype* representing a typical peer who engages in risky behaviors (e.g. eats unhealthy foods), (2) *a risky behavior abstainer prototype* representing a typical peer who abstains from risky behavior (e.g. does not eat unhealthy foods), (3) *a healthy behavior actor prototype* representing a typical peer who actively engages in healthy behavior (e.g. eats healthy foods) and finally (4) *a healthy behavior abstainer prototype* representing a typical peer who abstains from healthy behaviors (e.g. does not eat healthy foods).

Interestingly, the (few) positive descriptions obtained to describe unhealthy eaters often reflect social and relaxing aspects, like "fun-loving" (Barker et al., 1999) or "sociable" (Gerrits et al., 2009). Also, the (few) negative descriptions obtained for healthy eaters tend to reflect abstinence from something, for example, "serious" or "highly strung" (Barker et al., 1999). It is possible that as respected and eligible healthy eating may be, abstaining from unhealthy foods is not a desirable strategy for pursuing health in social situations.

One of the core ideas of the prototype-willingness model is that health behaviors take place in social context, in which intention to do something either does not exist at all or is so weak that it can be overridden by willingness to do something entirely different (Gibbons & Gerrard, 1995). Most recent findings suggest that in eating context, the actual behavior can be predicted directly by prototypes (Dohnke et al., 2015). Therefore, the distinction outlined by Rivis et al. (2006) raises interesting questions; does the abstaining or active nature of (healthy or unhealthy) eating behavior make a difference in terms of prototype favorability? Healthy eating differs from other health behaviors in a marked way: For smoking, there is only one way of choosing a healthy option, that is, by abstaining from smoking. Similarly, for physical activity, the only healthy way is to actively engage in being physically active. However, one can eat healthily both by choosing healthy foods and by abstaining from unhealthy ones. It is unclear how this influences prototypes.

Previous studies have examined associations between unhealthy or healthy eater prototypes and actual unhealthy or healthy eating behavior. To our knowledge, none has investigated all the four above-mentioned different prototypes, and their associations with respective eating behavior. The present study will address this gap in the literature.

The aims of the study are (1) to explore *healthy behavior actor or abstainer prototypes* ("Vegetable chooser" and "Vegetable abstainer") and *risky behavior abstainer or actor prototype* ("Fat abstainer" and "Fat chooser"), (2) to identify whether these four prototypes have similar factor structures and (3) whether these factors are interrelated. The final aim (4) is to explore the associations of these obtained factors with eating behavior.

Based on previous research among adolescents (Gerrits et al., 2009, 2010), we expect that the prototype evaluations will depict the following types of prototype factors among young adult men too: one that represents self-regulatory characteristics, another that contains items that relate to sociable characteristics and a third that relates to appearance.

Considering the previous research on evaluations of healthy and unhealthy eaters (e.g. Barker et al., 1999; Gerrits et al., 2009), we present the following hypotheses: (1) the healthy eater prototypes (Vegetable chooser and Fat abstainer) are rated more positively by their appearance and self-regulative characteristics than the respective unhealthy eater prototypes (Vegetable abstainer and Fat chooser). (2) Assuming that the sociable characteristic factor is found, choosers are rated over abstainers in the sociable characteristics factor within both healthy and unhealthy eating behavior. (3) As most healthy or unhealthy eater prototypes found in earlier literature seem to reflect self-regulative traits vividly (Gerrits et al., 2009), we expect self-regulative prototypes to play a crucial role in predicting respondents' own eating behavior. And (4) finally, assuming that abstaining from food is not socially acceptable, and knowing from previous research that unhealthy prototypes have more predictive power on behavior (Dohnke et al., 2015; Gerrits et al., 2009), we assume that Vegetable abstainer prototypes will have the strongest association with respective eating behavior.

2. Methods

The present study is a part of the DefenceNutri Study (Bingham et al., 2012; Hankonen, Kinnunen, Absetz, & Jallinoja, 2014) that took place in two garrisons: Kainuu Brigade in North-Eastern and Armoured Brigade in Southern Finland. In Finland, every man is liable for military service. During their service time, conscripts live in garrisons. At garrisons, men are provided three meals plus an optional evening snack. The provided meals are planned to meet the national nutritional recommendations as well as the demands the conscripts face during the service (e.g. if having a physically rough camping, the provided meals contain more energy). Fatty foods, such as pizzas, kebabs or burgers and so on are eaten as snacks rather than as planned meals. However, after the first weeks, if not on encampment, they often spend weekends and some other free days at home. Nearly 80% of the age cohort completes the service. About 95% of those who serve enter service at the year when they turn 19 or 20 years (Defence Command Public Information Division, 2012). Data were collected in 2008 and 2009 from four cohorts entering their service in January and July. Two service units from both garrisons were included to participate, each unit containing from 80 to 150 men. Participation was voluntary, and informed signed consent was obtained from those willing to participate. Participation took place during the service time. The study protocol was approved by the ethics committee of the Hospital District of Helsinki and Uusimaa.

2.1. *Participants*

The four cohorts contained 2.125 male conscripts of whom 1.824 (85%, Age: M = 19.8 years, SD = 0.81, range 19–28) filled in questionnaire in Finnish language during the first week of their military service. Of all participants, 98.6% were 22 or younger. Excluding the 25 older participants from the analyses did not change the results for the correlations or regression analyses. Thus, they were included in all analyses. Dropout was due to interruption of service, being ill during the measurements, military transfers or refusal to participate in the study. The participants reported their highest education achieved as follows: secondary school 12%, vocational training 42%, upper secondary school 44% and 3% had higher or some other education. Majority of the participants (76%) still lived with their parents, and only 22% lived alone or with a spouse.

2.2. *Measures*

2.2.1. *Prototypes and prototype factors*

Previous eater prototype studies have measured "typical healthy eater/unhealthy eater of your age" or "a typical person of your age who eats the following foods … " We decided to choose foods that (a) are very essential part of any healthy diet (i.e. fruit and vegetables) and (b) foods that are unhealthy and more likely to be consumed with peers than alone and (c) available in garrison area (fatty food). Both food groups have been targeted by health education for decades, and hence, their associations with health are relatively well known among population too (Jallinoja, Niva, Helakorpi, & Kahma, 2014). Moreover, the consumption of fruits and vegetables among conscripts is too low as regards recommendation (Bingham et al., 2009).

Participants were randomly assigned into two groups; either on Fat group where they evaluated a typical "Fat chooser" and a typical "Fat abstainer" ($N = 904$) or on Vegetable group where they were asked to evaluate a typical "Vegetable chooser" and a typical "Vegetable abstainer" ($N = 920$).The question: "We will ask you to evaluate a typical conscript, who behaves in a way described below" was followed by the definitions of an abstainer and an actor:

Abstainer: "A typical conscript who tries to avoid fatty foods and snacks" (Fat condition)/ "vegetables and fruits" (Vegetable condition) and Actor: "A typical conscript who strives for choosing fatty foods and snacks" (Fat condition)/"fruits and vegetables" (Vegetable condition) "at every meal".

Participants evaluated each four types on scales of 17 antonyms. The adjectives were selected based on earlier studies (Barker et al., 1999; Fries & Croyle, 1993) and on a qualitative pilot study among male conscripts. The adjective pairs were asked to be answered on a 5-point scale with the antonym adjectives at the extremes. Participants were asked to "choose an option from the scale that most accurately represents your opinion". The antonyms were the following: easy-going–uptight, popular–unpopular, unreliable–reliable, convincing–unconvincing, physically fit–physically unfit, childish–grown-up, fat–skinny, self-indulgent–austere, masculine–feminine, careless–meticulous, responsible–irresponsible, insecure–confident, muscular–lanky, fashionable–unfashionable, dumb–intelligent, attractive–unattractive and good company–dull. Appropriate reversions were done for higher scores to reflect more positive evaluations.

Exploratory factor analyses with Maximum likelihood extraction and Varimax rotation were conducted to investigate the factor structure of the four prototypes (Vegetable chooser, Vegetable abstainer, Fat chooser and Fat abstainer). The obtained factor solution was investigated with confirmatory factor analysis. The first analyses yielded a three-factor solution for Fat chooser and Vegetable avoider and four-factor solutions for Fat avoider and Vegetable chooser. For the three-factor solution the criteria were eigenvalues ≥ 1 and scree plots confirmed the results. For the four-factor solution, eigenvalues were ≥ 1, but the scree plots were less clear. Two items were dropped (convincing and austere) due to cross-loadings and field researchers' feedback from the comments from conscripts concerning the meaning of the items. In subsequent analyses, the three-factor solution was supported by eigenvalues and scree plots. The three-factor explanatory factor solutions explained from 46.3% to 52% of variance.

The factor structure was examined with confirmatory factor analysis, with Full Information Maximum Likelihood for estimating missing data. As an indication of acceptable model fit, Comparative Fit Indexes ranged from 0.82 to 0.87, Tucker–Lewis index from 0.78 to 0.84 and the Root Mean Square Error of Approximation from 0.07 to 0.08.

For all four prototypes, three similar factors emerged. The factors were Self-regulation (items: reliable, grown-up, meticulous, responsible and intelligent), Social standing in peer group (items: easy-going, popular, masculine and good company) and Appearance (items: muscular, fashionable, attractive, skinny and physically fit). Prototype items were subsequently summed into

composite scores for the analyses. The Cronbach's alphas were satisfactory at 0.60 level. Alphas for other Fat abstainer sum scores: Self-regulation $\alpha = 0.68$ and Social standing in peer group $\alpha = 0.64$. For Fat chooser sum scores: Self-regulation $\alpha = 0.73$, Social standing in peer group $\alpha = 0.66$ and Appearance $\alpha = 0.68$. For Vegetable abstainer sum scores: Self-regulation $\alpha = 0.72$, Social standing in peer group $\alpha = 0.60$ and Appearance $\alpha = 0.65$. For Vegetable chooser sum scores: Self-regulation $\alpha = 0.74$, Social standing in peer group $\alpha = 0.73$ and Appearance $\alpha = 0.66$.). As fat and vegetable prototypes were measured in different groups, the statistical comparisons were made within the group (i.e. fat prototypes in one and vegetable prototypes in another).

2.2.2. *Eating behavior*

Eating was measured by a 36-item food frequency questionnaire asking on how many days during the past week in civilian life the respondent had consumed certain foods (item range 0–7). The questionnaire was based on several corresponding questionnaires among Finns (e.g. Paalanen et al., 2006) and adjusted for conscripts on the bases of a previous food diary study among Finnish conscripts (Bingham et al., 2009). For the purposes of the present study, two eating indexes were created: Fruit and Vegetable Index to describe the consumption of fruits or berries and fresh vegetable (the mean of the two items), and Fatty Food Index to measure fatty food consumption (the mean of five items: French fries, potato chips, pizza and kebab, hamburgers and hot dogs, meat pies and savory pastries). The Fatty Food Index was based on earlier studies of eating behavior among men in military service (Bingham et al., 2011; Jallinoja et al., 2011). The Fruit and Vegetable Index varied between 0.00 and 7.00 ($M = 2.93$, $SD = 1.88$) and the Fatty Food Index between 0.00 and 6.20, ($M = 1.01$, $SD = 0.78$).

2.3. *Statistical analysis*

IBM SPSS 22 was used to obtain descriptive statistics, for explanatory factor analysis with maximum likelihood extraction and varimax rotation. For confirmatory factor analyses, Mplus version 6.1 was used. The first two hypotheses were tested with *t*-tests. A Pearson correlation coefficient was used to explore if the factors are related, as well as for the third hypothesis. For the fourth and fifth hypotheses, to predict fat or vegetable eating by the respective abstainer or chooser prototype factors, linear regression analysis was also used.

3. Results

Our first hypothesis anticipated typical healthy eater prototypes (Vegetable chooser and Fat abstainer) to be rated more positively than respective unhealthy eater prototypes (Vegetable abstainer and Fat chooser). The findings supported the hypothesis for two of the three factors: Self-regulation and Appearance. The means and confidence intervals of the different prototype factors are reported in Figure 1. According to two-tailed *t*-tests, a typical Vegetable chooser was rated higher than Vegetable abstainer on Self-regulation ($t(909) = 22.94$, $p < .001$) and on Appearance ($t(912) = 21.02$, $p < .001$). Fat abstainer was rated higher than Fat chooser on Self-regulation ($t(892) = 25.35$, $p < .001$) and on Appearance ($t(892) = 25.88$, $p < .001$). The ratings of Social standing were more strongly influenced by the abstaining vs. choosing nature rather than the healthiness of behavior. This supports our second hypothesis, which anticipated more positive ratings for choosers rather than abstainers; both Vegetable chooser and Fat chooser were rated higher on Social standing than the respective abstainers (Vegetable ($t(910) = 2.91$, $p = .004$; Fat ($t(892) = -8.78$, $p < .001$). Confirming the first hypothesis, single-item comparisons

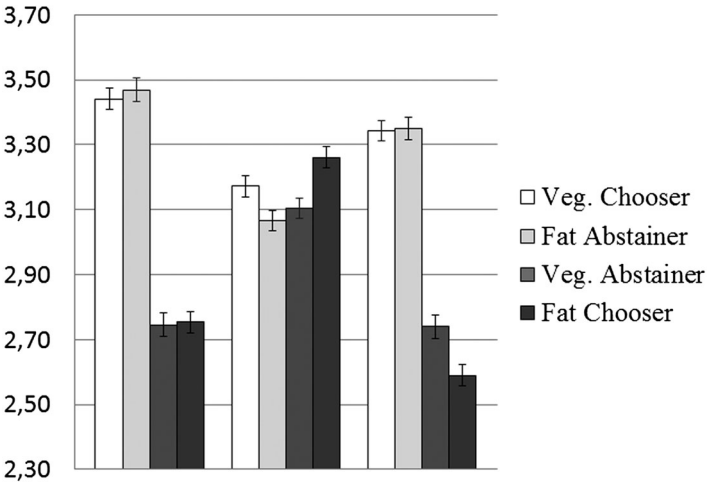

Figure 1. Means and confidence intervals for the Self-regulation, Social standing in peer group and Appearance prototype factors.

revealed that healthy eater prototypes were perceived more positively along 16 items than respective unhealthy eater prototypes (all $ps \leq .001$). In respect of masculinity, the association was reverse: both Vegetable chooser and Fat abstainer were seen *as less masculine* than Vegetable abstainer ($p = .001$) and Fat chooser ($p < .001$). The profile for single items can be seen from Figure 2.

The correlation matrix for the prototype factors of all four prototypes is shown in Table 1. Vegetable chooser prototype factors had significant negative correlations with all Vegetable abstainer prototype factors with two exceptions. Fat chooser prototype factors had significant negative correlations with all Fat abstainer prototype factors with two exceptions. Between chooser vs. abstainer prototypes, the correlations were strongest for Self-regulation. Moreover, within each prototype, the factor correlations were positive with the strongest correlations between Self-regulation and Appearance (see Table 1).

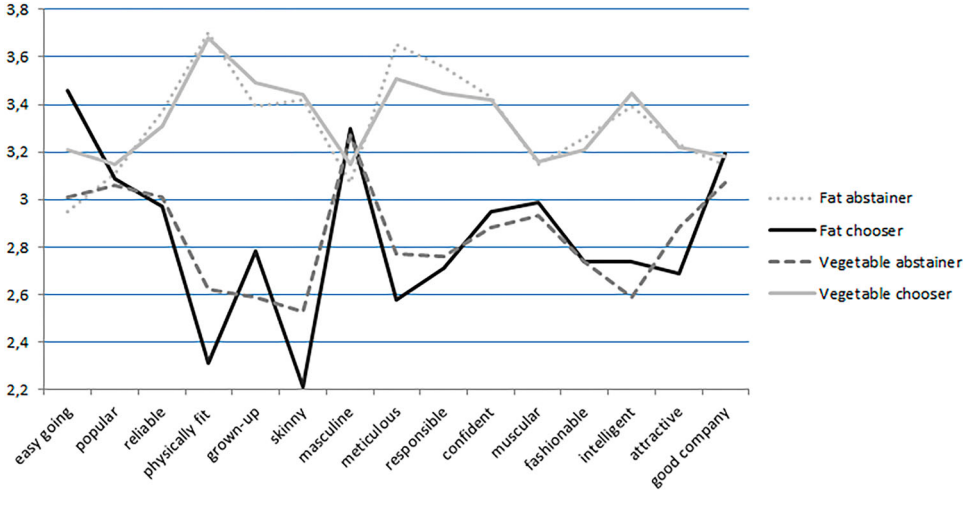

Figure 2. Profile diagram for the single items.

Table 1. Means, standard deviations and correlations between eater prototype factors.

			Vegetable chooser			Vegetable abstainer	
	M[a]	SD	Self-regulation	Social standing	Appearance	Self-regulation	Social standing
Vegetable chooser							
Self-regulation	3.44	0.53	1				
Social standing	3.17	0.50	.35**	1			
Appearance	3.34	0.49	.53**	.46**	1		
Vegetable abstainer							
Self-regulation	2.75	0.57	−.39**	−.11*	−.25**	1	
Social standing	3.10	0.47	−.06	−.20**	−.05	.23**	1
Appearance	2.74	0.55	−.38**	−.20**	−.39**	.52**	.32**
			Fat abstainer			Fat chooser	
			Self-regulation	Social standing	Appearance	Self-regulation	Social standing
Fat abstainer							
Self-regulation	3.47	0.54	1				
Social standing	3.07	0.48	.26**	1			
Appearance	3.35	0.53	.42**	.34**	1		
Fat chooser							
Self-regulation	2.75	0.49	−.35**	−.04	−.22**	1	
Social standing	3.26	0.50	.15*	−.11**	.07	.17**	1
Appearance	2.59	0.52	−.37**	−.12*	−.40**	.55**	.12**

Notes: [a]Min. = 1, Max. = 5.
*$p < .05$
**$p < .001$.

Table 2. Bivariate correlations and standardized regression coefficients from multivariate linear regression models for (A) fruits and vegetable consumption and (B) for fatty food consumption.

Prototype dimensions	*r* with fruit and vegetable consumption	*B*	SE *B*	*β*
Vegetable chooser				
Self-regulation	.19***	.35	.14	.10*
Social standing	.10***	.11	.14	.03
Appearance	.12***	−.03	.16	−.01
Vegetable abstainer				
Self-regulation	−.22***	−.42	.13	−.13**
Social standing	−.13***	−.21	.14	−.05
Appearance	−.21***	−.28	.14	−.08*
	r with fatty food consumption			
Fat abstainer				
Self-regulation	−.10**	−.07	.06	−.05
Social standing	−.05	−.01	.06	−.01
Appearance	−.09*	−.05	.06	−.04
Fat chooser				
Self-regulation	.14***	.12	.07	.08
Social standing	.07*	.09	.05	.06
Appearance	.13***	.08	.06	.05

Note: For A: $R^2 = .08$, $R^2_{adj.} = .07$, $F(6,897) = 12.15$, $p < .001$; For B: $R^2 = .03$,$R^2_{adj.} = .02$.
$F(6,880) = 4.59$, $p < .001$.
*$p < .05$.
**$p < .01$
***$p < .001$.

Our third hypothesis anticipated a positive association between prototype factor ratings and behavior, emphasizing the role of Self-regulation. As Table 2 shows, all three factors of Vegetable chooser correlated with a higher fruit and vegetable consumption, that is, more positive ratings of a vegetable-choosing peer were related to higher fruit and vegetable consumption. Conversely, Vegetable abstainer factors had negative correlations with fruit and vegetable consumption, meaning that more positive ratings of a vegetable abstaining peer were related to lower fruit and vegetable consumption. When all six Vegetable chooser and Vegetable abstainer factors were entered simultaneously into the model, Self-regulation in Vegetable chooser ($B = .35$, $p = .013$) and abstainer prototypes ($B = -.42$, $p = .001$) alike remained significant predictors. Thus, our last hypothesis of Self-regulation's strongest association with fruit and vegetable consumption within the model was not fully met. In addition, also Appearance in Vegetable abstainer prototype yielded significance in predicting fruit and vegetable consumption ($B = -.28$, $p = .041$). Of the Fat abstainer prototype factors, only Appearance was negatively associated with fatty food consumption while all three Fat chooser factors were associated positively with fatty food consumption. However, and contrary to our third hypothesis, in the multivariate model with all six Fat chooser and Fat abstainer factors, none remained significant predictors of the consumption of fatty food items.

4. Discussion

This study was the first to explore relative contributions of healthy and unhealthy eater prototypes with regard to two eating behaviors, using a representative sample of young men. To our knowledge, this is also the first study that has examined healthy actor and abstainer, and risky actor and abstainer eater prototypes, and their associations with respective eating behavior. In line with

earlier study, these prototypes reliably depicted factors describing self-regulation, social status in peer group and appearance (Gerrits et al., 2009). For the most part and as hypothesized, healthy eaters were perceived more positively than unhealthy eaters. The typical healthy eating peers, either abstaining (avoiding fatty foods) or active (choosing vegetables) were seen as more self-regulative when compared to the respective unhealthy eaters. Also, Vegetable choosers were perceived as better looking than vegetable avoiders and fat avoiders were perceived as better looking than Fat choosers. Also, the single-item comparisons supported the first hypothesis as healthy eaters were consistently rated more positively with one exception; healthy eaters – whether choosers or abstainers – were seen as less masculine when compared to unhealthy eaters. At this age group, in the military environment that consists of males mostly, the finding is not surprising.

The data supported our second hypothesis. Although healthy eaters are generally rated more positively (hypothesis 1), according to our results, being a chooser was rated over abstainer in both unhealthy and healthy foods in social standing; both vegetable and fat-avoiding peers were associated with lack of social standing in peer group, that is, negatively. This finding is new, and suggests that abstaining foods, whether healthy or unhealthy involves social risk taking, as it might not always the best way to be a "cool" member of the group. The moderate correlations obtained between the chooser and avoider prototypes suggest that these eater prototypes are not simply opposing ends of the same continuum.

This distinction of acting or abstaining can be easily applied to some behaviors like smoking. Smoking is unambiguously unhealthy and the unhealthiness is currently widely known. However, eating behavior is more complex, as eating is constant choosing between various healthy and unhealthy options with a multitude of different motives behind each choice. Most people eat unhealthy foods in some situations. Although our culture values health enhancement, the cultural code, reflected also in our results, is that this enhancement should not be taken too seriously, that is, one should not be "a health freak" (Pajari, Jallinoja, & Absetz, 2006).

Correlations with actual behavior were stronger for vegetable prototypes than for fat prototypes. This finding partly contradicts that of Gerrits et al.'s (2009) whose study showed correlations between unhealthy prototypes and eating only. However, the obtained associations between vegetable eater prototypes and actual eating in our study also suggested that the associations are stronger for unhealthy eating.

Dohnke et al. (2015) found that unhealthy snack consumption in peer context was predicted more by hunger than by prototypes. Perhaps the actual decision of choosing fatty foods, such as fast foods, is a result of a hunger or just craving, and also a more impulsive act than choosing vegetables. It is also possible that for a typical conscript, fast foods are simply more easily accessed than fruits and vegetables.

Earlier studies have already shown that adults who ate less fat themselves tended to rate low-fat consumers more positively than high-fat consumers (Barker et al., 1999). However, Gerrits et al. (2009, 2010) reported mixed results as regards fruit and vegetable consumption: Neither unhealthy nor healthy prototypes had significant associations with fruit and vegetable consumptions (Gerrits et al., 2009). Furthermore, more positive image of healthy eater prototype was found to be associated with higher fruit and vegetable consumption (Gerrits et al., 2010). Gerrits et al. (2010) discussed that peer influence might be less important for healthy eating than unhealthy eating. To our knowledge, the present study was the first to explore the association between specific fruit and Vegetable abstainer or chooser prototypes (i.e. not just healthy or unhealthy eater) and fruit and vegetable consumption. Our sample consists of some years older subjects than those of Gerritts et al.'s (2009, 2010) which might explain some of the differences found. But according to our results, the peer influence was actually more important for healthy eating than for unhealthy eating. Also, it seems that the image of a peer who *abstains* healthy foods might be at least equally influential on healthy eating.

It has been pointed out that all personal characteristics do not associate with eating (Garritis et al., 2009). For example, they conclude that unhealthy eater prototypes are more vivid when they reflect self-control than social aspects. In line with that, we found variation in magnitudes of the associations. Social status in peer group was not as strongly associated with eating behavior as was self-regulation. Adding to previous findings (Gerrits et al., 2009), we also found that these characteristics have a differential impact on eating: ratings of prototype's social standing in peer group played a negligible role as a predictor of eating behavior, while as hypothesized (hypothesis 3), ratings of eater's self-regulative characteristics were better predictors of eating behavior. This is an interesting finding in the context of the prototype-willingness model. The model assumes that there is a rational, intentional decision-making path, and that prototypes are part of a reactive path (Gibbons & Gerrard, 1995). According to our results, it seems that it is the less self-regulative *image* of an unhealthy eater or more self-regulative *image* of a healthy eater that might explain the association of eater prototypes and eating behavior.

Our last hypothesis was partly met; the self-regulative prototype factor of vegetable abstaining peer had the strongest association with eating behavior. However, so did the appearance factor and the self-regulative chooser factor, both on almost a similar magnitude. This finding – that both unhealthy (in this case abstaining) and healthy (in this case chooser) prototypes may predict healthy eating, if they are inspected behavior specifically – is a new one.

Like all studies, the present one has its limitations. Each participant answered either on Fat chooser and avoider prototypes or on Vegetable chooser and avoider prototypes. Thus, the analyses for fat and vegetable prototypes were run on separate samples, and they were not compared with each other. Being able to compare all four prototypes with their factors (making 16 factors all together) in the same model might yield interesting information of the most predictive prototypes. However, previous literature that has looked at unhealthy and healthy prototypes has shown that if something, they are only predictive to respective eating style (unhealthy eating or healthy eating) (Gerrits et al., 2009). Therefore, it is unlikely that "avoiding fruit and vegetables" would have predicted fatty food consumption even if we had had the data for the whole sample as outlined above. Also, although the magnitudes of the associations found are only moderate at best, the observed directions are in line with the theoretical expectations. Moreover, the cross-sectional design limits the opportunities for causal interpretation. Indeed, it is possible that men who consume unhealthy foods frequently associate positive characteristics to unhealthy eating habits in order to justify their behavior (Peretti-Watel & Moatti, 2006).

When compared to nutrition recommendations, the consumption of fruit and vegetable was quite low, that is, on average on three days per week in this sample. Even if the consumption of fruit and vegetables would fall on different days, the recommendation of consuming both daily is not met. The fatty food consumption, in turn, was relatively high. As the average of five items measured was on 1 day/week (SD = 0.78), an average participant eats those foods at least five times a week. These results reflect earlier findings from the same population, indicating that the recommendations are not met very well (Bingham et al., 2009). Measuring eating reliably in questionnaire and large sample studies is a challenging task. In the food frequency questionnaire used here, the options for items are limited, and in addition, the frequency measure ignores quantities. However, the items in the food frequency questionnaire measures were broad categories that describe the content of the typical diet of Finns' (Bingham et al., 2011). Moreover, we wanted to explore the food choices in civilian life, and for this aim, using food diaries would have been impossible with this sample size. As we used frequency questions that do not separate those who eat many or large portions per day, we calculated control analyses where the last portion size was taken into account, but the results remained similar.

The earlier prototype measures for eating have been more specific. For example, your impression of a type of person of your age "who eats breakfast/does not eat breakfast" (Rivis et al., 2006), is an "unhealthy/healthy eater" (Gerrits et al., 2009), or "eats "x" every day?" (Dohnke et al., 2015). "Typical conscript" (as defined in our prototype measure) lives in fairly closed environment and often eats the same nutritionally planned meals as all his peers at least three times a day. In this environment, a typical "very healthy" or "unhealthy" eater has to adapt his eating in military setting to the food provided by the garrison canteens. We operationalized the question to reflect the freedom of choice the conscripts have. Conscripts cannot always avoid many foods, but they may often choose at least the amount of fruit and vegetables at every meal. They may also choose the portion sizes for fatty foods, and they may also buy unlimited amounts of fast foods from the cafeteria on their free time. Also, conscription applies to men only; there are typically only 1–2 voluntary women among every unit of 90–150 men. So, although the environment is certainly more masculine than that in civilian life, the prototype question of "a typical conscript" refers to a same gender peer.

Generalization of the findings should be considered. The sample consisted of male conscripts conducting their military service and was drawn from two garrisons representing different geographical areas of the country. As almost 80% of each age group completed their military service (Defence Command Public Information Division, 2012), and the participation rate for the study was high, the sample is fairly representative of healthy 20 years old Finnish men. The results cannot be generalized to women of same age, as the results of eater prototypes suggest that eater prototypes are quite gender-specific (Steinhilber et al., 2013). Todd et al.'s (2014) meta-analysis suggested that the prototype-willingness model may be used to inform future interventions that can be tailored to at risk populations. This study has implications for interventions to promote healthy eating. Given that the image of a vegetable avoider was found to be most influential to eating behavior, the results suggest that promoting a positive image of vegetable eaters might be effective in increasing consumption of vegetables, but also that likewise interventions targeting the image of fatty food eaters might not be effective in decreasing fatty food consumption. This association should be tested in an experimental design. For example, building community campaign among young people in their own environment (like school or garrison) by imposing the target group to carefully planned images; either by pictures or by vignettes might be a cost-effective way to promote the positive image of a vegetable eater prototype.

In the future, experimental studies should investigate whether changing prototype is effective in influencing eating behavior and what are the most effective intervention strategies in doing this. Studies should also investigate whether more general health-related prototypes or more specific, food-related prototypes are more effective. They should also inspect if they effect differently in different population groups. For example, earlier research among older group of adolescent males (Steinhilber et al., 2013) and our results among young men suggest that it might be worthwhile trying to promote less self-regulative vegetable avoider prototype or more self-regulative Vegetable chooser prototype to promote fruit and vegetable intake.

In sum, this study was, to our knowledge, the first to demonstrate the usefulness of combining both abstainer and actor prototypes as well as healthy and unhealthy eating in the same study. We showed that young men evaluate their healthy eating peers as more self-regulative and better looking than unhealthy eating peers. Fatty food eater prototypes, whether abstainer or actor, did not associate with fatty food consumption. Vegetable eater prototypes, both abstainer and actor play a role in young men's eating behavior. Especially, how self-regulative the typical vegetable choosing or abstaining peer is seen is associated with fruit and vegetable consumption. Also, the image related to the appearance of the fruit and vegetable eating peer is associated with eating behavior.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This research was supported by the Academy of Finland (ELVIRA research program), and Maanpuolustuksen kannatussäätiö

References

Barker, M. E., Tandy, M., & Stookey, J. D. (1999). How are consumers of low-fat and high-fat diets perceived by those with lower and higher fat intake?. *Appetite*, *33*(3), 309–317.

Bingham, C. M., Jallinoja, P., Lahti-Koski, M., Absetz, P., Paturi, M., Pihlajamäki, H., & Uutela, A. (2010). Quality of diet and food choices of Finnish young men: A sociodemographic and health behaviour approach. *Public Health Nutrition*, *13*(6A), 980–986. doi:10.1017/S1368980010001187.

Bingham, C. M., Lahti-Koski, M., Absetz, P., Puukka, P., Kinnunen, M., Pihlajamaki, H., … Jallinoja, P. (2011). Food choices and health during military service: Increases in sugar- and fibre-containing foods and changes in anthropometric and clinical risk factors. *Public Health Nutrition*, *15*(7), 1248–1255. doi:10.1017/S1368980011003351

Bingham, C. M., Lahti-Koski, M., Puukka, P., Kinnunen, M., Jallinoja, P., & Absetz, P. (2012). Effects of a healthy food supply intervention in a military setting: Positive changes in cereal, fat and sugar containing foods. *The International Journal of Behavioral Nutrition and Physical Activity*, *9*(1), 91. doi:10.1186/1479-5868-9-91

Bingham, C. M., Ovaskainen, M. L., Tapanainen, H., Lahti-Koski, M., Sahi, T., & Paturi, M. (2009). Nutrient intake and food use of Finnish conscripts in garrison, on leave, and in encampment conditions. *Military Medicine*, *174*(7), 678–684.

Defence Command Public Information Division. (2012). *The Finnish defence forces annual report 2011*. Tampere: Juvenes Print Oy.

Dohnke, B., Steinhilber, A., & Fuchs, T. (2015). Adolescents' eating behaviour in general and in the peer context: Testing the prototype-willingness model. *Psychology & Health*, *30*(4), 381–399. doi:10.1080/08870446.2014.974604

Fries, E., & Croyle, R. T. (1993). Stereotypes associated with a low-fat diet and their relevance to nutrition education. *Journal of the American Dietetic Association*, *93*(5), 551–555.

Gerrard, M., Gibbons, F. X., Reis-Bergan, M., Trudeau, L., Vande Lune, L. S., & Buunk, B. (2002). Inhibitory effects of drinker and nondrinker prototypes on adolescent alcohol consumption. *Health Psychology*, *21*(6), 601–609.

Gerrits, J. H., de Ridder, D. T. D., de Wit, J. B. F., & Kuijer, R. G. (2009). Cool and independent or foolish and undisciplined? adolescents' prototypes of (un)healthy eaters and their association with eating behaviour. *Appetite*, *53*(3), 407–413. doi:10.1016/j.appet.2009.08.008

Gerrits, J. H., O'Hara, R. E., Piko, B. F., Gibbons, F. X., de Ridder, Denise T. D., … de Wit, John B. F. (2010). Self-control, diet concerns and eater prototypes influence fatty foods consumption of adolescents in three countries. *Health Education Research*, *25*(6), 1031–1041. doi:10.1093/her/cyq055

Gibbons, F. X., & Gerrard, M. (1995). Predicting young adults' health risk behavior. *Journal of Personality and Social Psychology*, *69*(3), 505–517.

Hahn, A., & Renner, B. (1998). Perception of health risks: How smoker status affects defensive optimism. *Anxiety, Stress & Coping: An International Journal*, *11*(2), 93–112.

Hankonen, N., Kinnunen, M., Absetz, P., & Jallinoja, P. (2014). Why do people high in self-control eat more healthily? Social cognitions as mediators. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, *47*(2), 242–248. doi:10.1007/s12160-013-9535-1

Jallinoja, P., Niva, M., Helakorpi, S., & Kahma, N. (2014). Food choices, perceptions of healthiness, and eating motives of self-identified followers of a low-carbohydrate diet. *Food & Nutrition Research*, 58. doi:10.3402/fnr.v58.23552

Jallinoja, P., Tuorila, H., Ojajarvi, A., Bingham, C., Uutela, A., & Absetz, P. (2011). Conscripts' attitudes towards health and eating. changes during the military service and associations with eating. *Appetite*, *57*(3), 718–721.

van Lettow, B., de Vries, H., Burdorf, A., & van Empelen, P. (2014). Quantifying the strength of the associations of prototype perceptions with behaviour, behavioural willingness and intentions: A meta-analysis. *Health Psychology Review*, 1–19. doi:10.1080/17437199.2014.941997

National Nutrition Council. (2005). Finnish nutrition recommendations (in Finnish). Helsinki: Edita Prima Oy. doi:10.3402/fnr.v58.23552

Oakes, M. E., & Slotterback, C. S. (2005). Prejudgments of those who eat a "healthy" versus an "unhealthy" food for breakfast. *Current Psychology*, *23*(4), 267–278.

Paalanen, L., Mannisto, S., Virtanen, M. J., Knekt, P., Rasanen, L., Montonen, J., & Pietinen, P. (2006). Validity of a food frequency questionnaire varied by age and body mass index. *Journal of Clinical Epidemiology*, *59*(9), 994–1001.

Pajari, P. M., Jallinoja, P., & Absetz, P. (2006). Negotiation over self-control and activity: An analysis of balancing in the repertoires of Finnish healthy lifestyles. *Social Science & Medicine*, *62*(10), 2601–2611.

Peretti-Watel, P., & Moatti, J. (2006). Understanding risk behaviours: How the sociology of deviance may contribute? The case of drug-taking. *Social Science & Medicine*, *63*(3), 675–679. doi:10.1016/j.socscimed.2006.01.029

Piko, B. F., Bak, J., & Gibbons, F. X. (2007). Prototype perception and smoking: Are negative or positive social images more important in adolescence? *Addictive Behaviors*, *32*(8), 1728–1732. doi:10.1016/j.addbeh.2006.12.003

Rivis, A., Sheeran, P., & Armitage, C. J. (2006). Augmenting the theory of planned behaviour with the prototype/willingness model: Predictive validity of actor versus abstainer prototypes for adolescents' health-protective and health-risk intentions. *British Journal of Health Psychology*, *11*(3), 483–500. doi:10.1348/135910705X70327

Stead, M., McDermott, L., MacKintosh, A. M., & Adamson, A. (2011). Why healthy eating is bad for young people's health: Identity, belonging and food. *Social Science & Medicine*, *72*(7), 1131–1139. doi:10.1016/j.socscimed.2010.12.029

Steinhilber, A., Fuchs, T., & Dohnke, B. (2013). Die wahrnehmung von esser-prototypen als erklärung von geschlechterunterschieden im ernährungsverhalten unter berücksichtigung des alters. [The perception of eater-prototypes as explanation of gender differences in eating behaviour under consideration of age]. *Zeitschrift Für Gesundheitspsychologie*, *21*(2), 82–90. doi:10.1026/0943-8149/a000093

Todd, J., Kothe, E., Mullan, B., & Monds, L. (2014). Reasoned versus reactive prediction of behaviour: A meta-analysis of the prototype willingness model. *Health Psychology Review*, doi:10.1080/17437199.2014.922895

Zimmermann, F., & Sieverding, M. (2011). Young adults' images of abstaining and drinking: Prototype dimensions, correlates and assessment methods. *Journal of Health Psychology*, *16*(3), 410–420. doi:10.1177/1359105310373412