

## Do health-related feared possible selves motivate healthy eating?

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### Abstract

The question of what motivates individuals to assume healthy eating habits remains unanswered. The purpose of this descriptive survey is to explore health-related feared possible selves in relation to dietary beliefs and behavior in adults. A convenience sample of 74 middle-aged employees of a health maintenance organization completed self-administered questionnaires. Health-related feared selves, current health perception, knowledge of diet-health association, dietary self-efficacy, dietary intention and intake were measured. Health-related fears were the most frequently reported feared selves, but very few of those represented illnesses and none were related to dietary intake. The number of health and body weight related fears was significantly associated with lower dietary self-efficacy and weaker intention to eat in a healthy manner. Multivariate analysis showed self-efficacy to be the only significant predictor of dietary intention. These adults may not have perceived being at risk for diet-associated illnesses, and so their feared selves did not motivate them to eat in a healthy manner. Research on the effect of hoped for health related possible selves and the perceived effectiveness of diet in reducing health risk are recommended.

### Introduction

Empirical evidence implicates diets high in saturated fat and low in fiber as risk factors for heart disease and some types of cancer and points to a role of dietary fat in obesity that is affecting 31% of the U.S. population.<sup>1,2</sup> Despite the raised public awareness of the impact of dietary intake on health, around 60% of Americans do not follow dietary fat recommendations.<sup>3</sup>

Recognition that knowledge, though necessary, may not be sufficient to predict eating behavior led investigators to utilize various models to explain this behavior.<sup>4</sup> The self-concept framework has been recently used in the health domain, with the assumption that

knowledge about the self in a domain is likely to predict and regulate related behaviors.<sup>5</sup>

Healthy eating behavior has been studied in relation to self-related constructs such as dietary self-efficacy,<sup>6-11</sup> beliefs about personal health risks,<sup>12</sup> and healthy eating self-schema.<sup>13,14</sup> A consistent finding is the strong positive relationship between self-efficacy, the belief in one's ability to eat in a healthy manner, and healthy eating patterns. On the other hand, perception of being at risk for health problems did not show consistent relationship to dietary intention and behavior.<sup>15,16</sup> Moreover, current self-perception as healthy eater (healthy eater self-schema), predicted healthy eating intention and behavior.<sup>13,14</sup> The current study explored future and current self-perceptions in the health domain in a sample of middle-aged adults in relation to their intention to eat in a healthy manner and dietary intake.

The self-concept, defined as the cognitive-affective system that houses mental representations of objects, beliefs and events to which one is exposed through interacting with the environment,<sup>17</sup> provided the theoretical framework for this study. Future self-perceptions or possible selves are images that one sees for him/herself in the future, including desired (hoped for) and dreaded (feared) possible selves. Based on current and future self-perceptions in a domain, people set goals and action plans to reduce the discrepancy between their current and hoped for selves, or increase that between their current and feared selves.<sup>17</sup> Health related feared selves were conceived to motivate health protective behaviors. In a survey of 173 adults, health-related possible selves were found to be the most frequently generated category of feared selves in all age groups, with middle-aged adults reporting more feared selves and older adults listing more health related hopes.<sup>18</sup>

Other studies found more feared than hoped for possible selves in the health domain in adults.<sup>19,20</sup> These investigators asked participants to indicate which possible self was most important to them and found that those who indicated a health related possible self as the most important reported engaging in more health preventive behaviors, including healthy eating, than their counterparts. More recently, health related possible selves were studied in relation to exercise behavior in 203 middle-aged women.<sup>21</sup> Hoped for and feared selves related to body image were significantly more likely to be generated by inactive women than active ones. Also the importance of the feared self and exercise self-efficacy discriminated exercisers from non-exercisers.<sup>21</sup>

No published study was found that examined health related possible selves in relation to healthy eating. With middle aged adults generating more health related fears than hopes,

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it is possible that health related feared possible selves mediate the possible influence of one's perception of personal risk for health problems on his/her intention to eat in a healthy manner and subsequent dietary intake. Nevertheless, health-related fears may not be sufficient to motivate healthy eating. For the person to choose healthy eating to reduce his/her health risk, we assumed that he/she must be aware of the relationship between diet and health. Higher diet-health association knowledge was found to positively predict healthy diet.<sup>22</sup> Moreover, how capable a person feels about avoiding a feared health-related possible self is essential to predict health behavior.<sup>20</sup>

The outcome variable in this study was dietary intention, or the intention to eat in a healthy manner. This intention represents the specific goals that are likely to drive dietary behaviors aimed at reducing related health risks. Self-efficacy, diet-health association knowledge, current health perception and dietary intake were also studied in relation to health related fears. We hypothesized that if a person fears acquiring diet-related illnesses, the motivation to eat in a manner to reduce such risks might be mitigated if the person does not believe he/she can do so. The aim of this study was to explore health related feared possible selves as possible motivators of healthy eating in middle-aged working adults. Research questions were: i) what are the frequency, types and perceived importance of

health-related feared possible selves in this sample of middle-aged adults? ii) How do health-related fears relate to knowledge of diet-health association, self-efficacy, current health perception, dietary intention and intake? iii) Does dietary self-efficacy moderate the influence of health related fears on dietary intention?

## Materials and Methods

### Study sample

This descriptive study used survey methodology. The convenience sample included 74 middle-aged employees of a health maintenance organization (HMO) in the US. Inclusion criteria included age of 40 to 65 years, at least middle school level of education and household income of at least \$30,000. Middle-aged adults are usually at a higher risk for chronic illnesses than younger adults and likely to have witnessed health problems in themselves or their peers. Education was controlled since it was found to be related to nutrition knowledge,<sup>23</sup> and income because of its impact on access to and availability of dietary sources, which in turn influences dietary intake.

### Procedure

After securing the approval of the university's institutional review board and the administration of the HMO, participants who met the study criteria were recruited by an email advertisement. One week following the email announcement, 300 employees were mailed questionnaire packets with stamped return envelopes. The cover letter included explanation of the study and promise of confidentiality. Reminder emails were sent at one and three weeks after the original mailing; 74 completed questionnaires were returned, with a 24.67% response rate.

### Measures

Feared possible selves were measured by asking participants to list the feared selves they imagine for themselves in the future, then to place a check next to the one they considered to be the most important *i.e.* feared by them.<sup>18</sup> The answers were initially coded into nine categories: Health/physical, personal characteristics, family roles, non-family relationships, occupation, material possessions, leisure activities, lifestyle, and education. The primary investigator and another rater coded the feared selves independently, with 91.4% agreement ( $\kappa=0.89$ ) for all categories and 84.7% ( $\kappa=0.80$ ) for the health-related category. Previous investigators reported 95.3% to 99.3% agreement ( $\kappa=0.90$ ) across categories,<sup>18</sup> and 91% ( $\kappa=0.74$ ) for the health-related category.<sup>20</sup> The categories were modified

as per Whaley,<sup>21</sup> to elucidate specific types of health related fears into i) health problems (sickness, illness); ii) physical (inability to move); iii) body image (being overweight, fat); iv) dependent (references to being dependent on others and to lifestyle); v) projects, which combined the leisure and material categories; and vi) occupation that combined occupation and education. The two remaining categories were vii) relationships that included family and non-family relations, and viii) personal as per Cross and Markus.<sup>18</sup> Current health perception was measured by the widely used question *How would you rate your health at the present time?* rated on 5-point Likert scale from 1 (poor) to 5 (excellent).

Diet health association knowledge was measured by the diet-health awareness test (DHA).<sup>24</sup> Participants are asked whether they heard of any health problem that may be related to the intake of fat, fiber, cholesterol, salt, calcium, sugar and being overweight. Next to each question, the respondent is then asked to indicate which health problems were related to that nutrient from a list of 16 diseases. A panel of experts supported the scale's content validity. Internal consistency was tested with the Kuder-Richardson (KR-20), with values of 0.76 to 0.80.<sup>23</sup> A summative score (range 0-30) is used. Since the DHA was usually administered by telephone interview and planned for self-administration in this study, it was tested on 20 middle-aged university staff. Respondents complained about the questionnaire's difficulty for self-administration, especially choosing from 16 diseases. The scale was revised by removing the 16 diseases and using eight choices for each question from the original list. The KR-20 of the DHA in this study was 0.81.

Self-efficacy was measured with a 23-item scale rated on a scale of 0 (not at all confident) to 10 (very confident).<sup>20</sup> Factor analysis extracted four factors: i) control of portion sizes, ii) resisting high fat snacks/desserts, iii) selection of high fiber foods and iv) use of low fat milk instead of whole milk and Cronbach's alpha of 0.87 was reported.<sup>20</sup> In this study, Cronbach alpha was 0.92.

Dietary intake was measured by a 34-item questionnaire adapted from the Diet Habit Survey (DHS), which asks about the intake in the past month of meat products, dairy products and eggs, fats and oils, sweets and snacks, fruits and vegetables, grains and beans, salt, seafood and eating in restaurants.<sup>25</sup> A total summative score, a cholesterol-saturated fat and a carbohydrate score are obtained; higher scores indicate healthier diets. Based on the DHS score, respondents' diet is classified as typical American (37% fat), one that follows recommendations (30% fat), 20% fat and 10% fat diet. Connor *et al.*<sup>25</sup> reported acceptable validity (significant correlations between

reduction in dietary fat and blood cholesterol reduction over five years,  $P=0.008$ ), internal consistency (Cronbach's alpha 0.88 to 0.95) and two months test-retest reliability ( $r$  values 0.6 to 0.87) of the DHS. Cronbach's alpha in this study was 0.74.

The dietary intention scale, developed for this study, included six items that asked the participants how likely they were to perform healthy eating behaviors *over the next month*. The items paralleled the main sections of the DHS and were scored on a 7-point Likert scale (1 = very unlikely to 7 = very likely). The items were phrased as: I intend to *use limited amounts of fat in cooking; use kidney beans, chickpeas and lentils in salads, soups and entrée dishes; choose small portions (2-3 ounces) when I eat red meat; eat a diet that is low in fat; eat fruits and/or vegetables for most of my snacks; and use reduced fat or fat free versions of dairy products*. A panel of experts supported the content validity and Cronbach alpha was 0.82.

Finally, demographic questions covered gender, age, ethnicity, level of education, occupation, and marital status. Health-related questions addressed height, weight, presence of health problems, hypertension, high blood cholesterol, family history of heart disease, being on a special diet, smoking status and exercise habits.

### Statistical techniques

Data were analyzed with the Statistical Package for the Social Sciences (SPSS) version 16. Means, standard deviation and frequencies were used to describe the sample. Frequencies and content analysis were used to describe the feared selves. A continuous variable combining fears related to health problems and body image was used for the bivariate and multivariate analyses of health related fears with other variables in the study; this was created since body weight fears were relatively infrequent in occurrence yet do relate to dietary behavior. Pearson  $r$  correlation coefficient was used to answer question two. Multiple regression analyses with moderation testing using the method of Baron and Kenny were used for question three.<sup>26</sup> Alpha was set at 0.05.

## Results

### Sample characteristics

The sample included 74 participants, with mean age  $48.82 \pm 6.55$  years; half of the participants were 40 to 50 years old. The majority of the sample was females (78.4%), white (67.6%), and married or living with a partner (56.8%). Forty percent were in at least middle level management positions, and 43.2% had at

least some college education. The mean body mass index (BMI) was  $28.40 \pm 6.53 \text{ Kg/m}^2$ ; over one third of the participants (37.1%) had normal BMI and the rest were equally divided between overweight and obese.

Health problems were reported by 27.4% of participants; the most frequently reported were arthritis (25%), diabetes (15%), then back problems, asthma or kidney problems (5% each). Twenty percent of the participants had hypertension, 28.4% high blood cholesterol and 50.7% reported family history of heart disease. Around one third of the sample (28.4%) reported being on some special diet (mostly low fat and/or low calorie diet). Only 9.5% were current smokers and 58% reported doing regular exercise. The mean current health perception score was  $3.49 \pm 0.85$ , with 50.7% rating their health as very good or excellent, 37% as good and 12.3% as fair.

According to the DHS scores, the diet of 52% of the participants was a high fat diet. In 30.7% of participants, the diet met the national dietary recommendations and for the rest of the sample (17.3%) it was a low fat diet. The mean DHA score was  $21.05 \pm 4.40$ ; mean self-efficacy score  $6.88 \pm 2.00$  and the mean intention score  $4.57 \pm 1.50$ .

### Feared possible selves

Five participants did not report any feared

possible selves and another six did not report any fears related to health. Table 1 shows the frequency and importance of feared possible selves, with sample items from all categories. The most frequent category of feared selves was health problems (64%), with a mean of  $0.96 \pm 0.89$  selves. The majority of the reported health fears were general terms such as: sick, unhealthy (physically, mentally); having health problems; senile; blind; forgetful and confused. Only ten participants mentioned fears of specific diseases, with four mentioning cancer, three Alzheimer's disease, two diabetes and one osteoporosis.

The numbers of personal fears and relationship fears were the highest ( $1.24 \pm 1.51$  and  $1.04 \pm 1.07$ , respectively), though those categories were less prevalent than health problems. Projects accounted for 53% of fears (mean  $0.57 \pm 0.60$ ). Dependence feared selves were prevalent in 32% of the sample and revolved around depending on others (mean  $0.37 \pm 0.54$ ), whereas occupation fears were mentioned by 24% (mean  $0.34 \pm 0.78$ ). Physical fears included losing ability to do some activity (mean  $0.21 \pm 0.48$ ). Body image fears referred to becoming overweight or obese (mean  $0.16 \pm 0.37$ ). Thirteen participants did not select a feared self as the most important to them; of those who did, the most commonly chosen category was health problems (35%)

and the least were body image and projects, each 2% (Table 1).

### Predictors of dietary intention

Results of bivariate correlations are shown in Table 2. Higher numbers of feared selves about health problems and body image were significantly associated with lower self-efficacy and intention scores. Negative associations with current health perception ( $P=0.08$ ) and diet health association knowledge ( $P=0.08$ ) approached significance. Higher level of education was associated with more a positive health perception, higher DHA knowledge and healthier diets. Moreover, the DHA score was positively associated with dietary intention and intake. Self-efficacy was significantly associated with dietary intention and intake, and marginally with DHA knowledge ( $P=0.09$ ).

Multiple regression analysis was made with intention as dependent variable (Table 3). The level of education, DHA knowledge, health problems and body image fears, self-efficacy and an interaction term for the latter two variables were entered as predictors. The model explained 57% of the variance in intention. The only significant predictor was self-efficacy ( $\beta=0.75$ ,  $P<0.001$ ). The interaction term was not significant, thus the moderation hypothesis was not supported.

**Table 1. Frequency of mention and choice as most important of feared selves by category and sample items (N=69).**

Category	Mentioned, %	Most important, %	Sample items
Health problems	64	35	Sick, ill, unhealthy, loss of memory, loss of sight, senile, Alzheimer's disease, diabetes, cancer
Personal	60	27	Horrible death, unhappy, uncaring, prideful
Projects	53	2	Unable to travel, becoming poor, unable to provide for myself
Relationships	43	22	Being alone, losing friends, being a widow, unlovable
Dependence	32	16	Invalid, dependent, unable to care for myself, incapacitated, disabled
Occupation	24	7	Loss of job, being stuck in a dead-end job
Physical	17	4	Weak, not mobile, becoming a permanent couch potato, unable to do yard work, unable to walk
Body image	16	2	Overweight, fat, obese

The percentages add to more than 100% since many participants listed fears in more than one category, and some even indicated more than one type of fear as most important

**Table 2. Pearson r correlations between the study variables (N=74).**

Variable	Health & body image feared selves	Current health perception	Level of education	Self-efficacy	Dietary intention	Dietary intake	DHA score
Health & body image feared selves	-						
Current health perception	-0.21 <sup>#</sup>	-					
Level of education	0.16	0.28*	-				
DHA score	-0.21 <sup>#</sup>	0.14	0.31*				
Self-efficacy	-0.25*	0.15	0.14	0.20 <sup>#</sup>			
Dietary Intention	-0.28*	0.09	0.15	0.24*	0.73**		
Dietary intake	-0.11	0.10	0.30*	0.26*	0.67**	0.70**	

DHA, diet health awareness; <sup>#</sup>0.05<P<0.1; \*P<0.05; \*\*P<0.01.

## Discussion and Conclusions

This study examined the nature of health related possible selves and their relation to current health perception, dietary beliefs, intention and intake in a sample of middle-aged adults. The main strengths of this study are its theoretical basis, the open ended approach used in eliciting possible selves to reduce bias, and the use of validated instruments whereby beliefs and perceptions that were studied were consistent in focusing on diet related cognitions. The novel finding of this study that people do not necessarily associate their perceptions of health risk and associated fears with their dietary behaviors and intentions suggests that trying to motivate people to eat healthy by focusing on their health risk may not be an effective strategy. The health-related feared selves in this sample were similar to those reported by other investigators in number and description.<sup>18,20,21</sup> The most frequent health fears were getting sick, ill, senile, forgetful, and confused; these fears are expected with the prospect of aging and its accompanying functional decline. Moreover, it was interesting to note that the few diseases mentioned by the participants are not commonly perceived to be under one's preventable control, especially not through diet, except for osteoporosis that is related to calcium intake. Since many participants reported high blood cholesterol, hypertension and a positive family history of heart disease, it was surprising that none of them listed heart disease or stroke as a feared self. This finding parallels the results of risk perception studies,<sup>27</sup> in which individuals rated their risk lower for diseases over which they could have some control through their actions, compared to that for uncontrollable diseases. The feared diseases in this sample suggest an optimistic bias, where the individual underestimates his/her susceptibility to controllable diseases. The participants had quite a positive perception of their current health status, which may make thinking of and fearing the occurrence of negative health problems in the future unlikely. An alternative explanation is possible lack of knowledge of health risk factors, but this is unlikely in this relatively well educated sample exposed to health information by virtue of working in an HMO (15% were nurses), and the adequate scores on the DHA test. Thus results reflect either lack of awareness or denial of health risks common to middle aged adults in this sample.

The perceived importance of possible selves is believed to motivate related behaviors. Secondary analyses of differences in dietary variables between those who indicated fears related to health or body image as most important and those who did not failed to show sig-

**Table 3. Regression analysis summary for predictors of dietary intention (N=69).**

Variable	B	Standard error of B	Beta
Level of education	0.08	0.14	0.05
DHA test score	0.02	0.03	0.07
Number of health problems and body image fears	-0.05	0.54	-0.03
Self-efficacy	0.58	0.13	0.75**
Interaction term (health or body image fears and self-efficacy)	-0.02	0.07	-0.07

DHA, diet health association; \*\*P<0.01.

nificant associations. Whereas 35% of fears chosen as most important related to health problems, only 2% related to body image. With two thirds of participants being overweight, one would expect more salience of body weight concerns. However, these individuals, rather than fearing what they are already surviving, may be hoping to lose weight. Hoped for possible selves were not measured in this study and may have shown a relation between future body weight self-perceptions and dietary intention.

The negative association between health and body image fears and intention did not support the hypothesis of health related possible selves as motivators of healthy eating in this sample. These results concur with those of Sparks and colleagues,<sup>28</sup> who found optimism about health risk to correlate positively with higher fat intake. These findings, along with the nature of the feared selves, suggest that the optimistic bias regarding health risk may be defensive.<sup>29</sup> So as long as the individual does not perceive the possibility of health risks that are controllable through his/her actions (namely diet-related illnesses), he/she would not be motivated to perform relevant protective behaviors (healthy eating).

The negative association between the number of health and body image fears and self-efficacy cannot be explained by the data, due to the cross sectional nature of the study; it is possible that people with low self-efficacy fear more health problems and not vice versa. With body weight being the most likely aspect to be impacted by one's diet, overweight individuals may have tried to lose weight over the years and failed, so although they fear gaining more weight they do not have confidence in being able to prevent it; however, the number of body weight fears was too small to test this possibility. The lack of association between the number of health fears and dietary intake may be explained by the lack of perceived relation between illness and diet, as suggested by the generic health fears reported by the sample that may be related to any number of factors. Moreover, considering the good DHA knowledge in this sample and its positive relation to dietary intention and intake, it may be that the participants were not aware of the quality of their diet and subsequently its influence on

their own health; these variables were not measured in this study.

The relation between self-efficacy on one hand, and dietary intention and intake is consistent with the literature, and its strength can be explained by the fact that one third of the sample were on a special diet already, and thus may have developed self-efficacy by personal experience.<sup>30</sup> Multivariate analysis did not support a moderating effect of self-efficacy on the relationship between health related fears and dietary intention. The strength of association between the number of health fears and intention was modest and did not hold when self-efficacy was controlled. With the health fears generated by the participants being rather general whereas self-efficacy beliefs were diet specific, these findings are not surprising.

The convenience homogeneous well educated sample used in this study limits generalizability of the findings. Replication with larger representative samples is needed. Investigation of beliefs about the healthiness of one's diet, effectiveness of adopting healthy eating in reducing health risk, and what health risks do people perceive would result from unhealthy eating is recommended. Moreover, examination of hoped for possible selves in relation to dietary behavior is needed to identify whether they are better motivators than feared selves, or contain more diet specific perceptions. Investigators did argue for a stronger effect of hoped for possible selves on health behaviors.<sup>20</sup> Finally, the findings inform counseling people regarding their eating patterns, by providing an insight into the kind of health concerns people may hold for their future and the importance of targeting self-efficacy in dietary interventions.

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