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A COMPARISON OF FOOD MOTIVATIONS IN GERMANY AND THE UNITED STATES

Bachelor Thesis

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Abstract

Background: Obesity is a growing global problem and prevention has been a challenging task. Motivation could be key to understanding human food choices. The environment can have an influence on eating motivation. A comparison of two nationalities' eating motivation could verify whether those variances are significant for health-promoting interventions.

Method: This study used *The Eating Motivation Scale* to explore differences in food attitudes between Germany and the United States of America. A combination of other instruments was used to briefly assess other factors influencing motivation such as *health motivation, health responsibility, locus of control, influence of important others, body satisfaction, diet behavior,* and *diet quality.*

Results: The most important motives for food choice overall are *Liking*, *Need and Hunger*, and *Health*. 6 out of 15 motives are significantly different across nationalities. US-Americans are less motivated by *Liking* and *Natural Concerns*, but more motivated by *Convenience, Social Norms, Social Image, and Affect Regulation* than Germans. US-Americans are easier influenced by their social environment and exhibit less internal control. US-Americans are highly health-oriented but more likely to be obese. Results suggest a correlation between weight loss and emotional eating.

Conclusion: Some differences in motivation for food choice exist between Germany and USA. The motives are influenced by other behavioral factors.

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1. Introduction

Obesity is one of the greatest global health problems of modern times (Yumuk, et al., 2015). Despite numerous efforts to stop this epidemic, the amount of overweight and obese individuals continually increases (Forouzanfar, et al., 2016). According to the World Health Organization (WHO) obesity rates have more than doubled since 1980 (WHO, 2016).

About 13% of adults globally are obese and 39% are overweight. In addition, childhood obesity is a growing problem; in 2014, 41 million children under the age of 5 years were already overweight or obese. Most obese children will become obese adults (WHO, 2016). This increases their future risk of developing non-communicable diseases (NCDs) such as cardiovascular disease (CVD) or type 2 diabetes (WHO, 2016). It is projected that by 2030 as much as 60% of the world's population might be overweight or obese, if the current tendencies are maintained (Yumuk, et al., 2015).

Economic transitions in many regions result in an epidemiologic shift alongside a shift in eating patterns; while the prevalence of infectious disease falls, NCDs become more frequent. With rising incomes, overnutrition has become a greater challenge (FAO, 2017). Globally, more deaths are caused by the consequences of obesity than those of underweight and malnutrition (WHO, 2016).

It is well documented that excess weight leads to health problems and early death. A high body mass index (BMI) is associated with a significant decrease in years lived in good health (Stenholm, et al., 2017).

While the overall life expectancy in developed countries continues to increase, the disease burden as measured by disability-adjusted life years remains unchanged for many important risk factors, including nutritional risks. The disease burden of CVD, diabetes and musculoskeletal

disorders has, in fact, increased over the past years. The burden from NCDs is expected to keep growing, as demographic transitions are forecasted to continue (Forouzanfar, et al., 2016). In addition to significantly reducing the quality of life (QOL), obesity and obesity-related diseases have high individual and economical costs (WHO, 2016; Kent, et al., 2017).

These facts are alarming, especially in light of strong evidence, for obesity and overweight being preventable. Healthy nutrition together with physical activity are essential for prevention of obesity and resulting NCDs (Ceccarini, et al., 2015). While a genetic predisposition certainly does exist (Wadden, et al., 2002), explaining why some individuals are more predisposed to being overweight than others, it is the modern lifestyle that leads to weight gain (Wadden, et al., 2002). With economic growth, diets become higher in total fat and refined carbohydrates but lower in fiber. This shift in eating is usually accompanied by an increasingly sedentary lifestyle (FAO, 2017). Such a lifestyle results in positive energy balance which, if sustained long-term, will lead to weight gain (Wadden, et al., 2002).

Many strategies for obesity-prevention have been developed. Some examples of prevention-strategies include: efforts to increase nutrition knowledge on an individual level, making recommendations for increasing intake of fruits, vegetables, and whole grains, and population based policies that make healthy choices easier (e.g. taxation of unhealthy foods). Attempts to restrict the marketing of unhealthy foods, especially to children, or to increase regular physical activity at schools and workplaces are made (WHO, 2016). However, it seems that policy makers have not been as successful in changing eating choices and health beliefs among the general population.

Obesity causes are complex. One should consider the social and psychological factors that play a role in food choices (Simpson, et al., 2015). Furthermore, eating behavior is largely influenced by habits. Habits are established during childhood and carried out into adult life. Beliefs that are learned in early life will influence dietary behavior later in life (Leng, et al., 2016). Research suggests that traditional health education might be insufficient to change eating behavior (van't Riet, et al., 2011).

Research suggests that food choices are rarely made for health reasons alone. For a large portion of the population, the issue of health might be of little importance. Thus, interventions focusing merely on health might not reach many individuals. Food choices can be influenced by numerous factors, such as the desire to control weight, price, convenience, taste, mood, familiarity, social reasons, access, exposure to advertising, nutritional content, and ethical concern, to name a few (Steptoe, et al., 1995; Teixeira, et al., 2011). Individuals are often unaware of their dietary behavior and the influence that diet might have on disease risk, making it challenging for them to take action (Petrovic & Ritson, 2006).

Healthy eating choices are often predicted by risk perception and awareness about a link between diet and disease (Walthouwer, et al., 2015). Research indicates that those, who believe obesity to be inherited are usually less motivated to change behavior (Wang & Coups, 2010). Individuals often find it difficult to make lifestyle improvements because of barriers like perceived effort, seemingly high cost, peer influence or lack of time (Ashton, et al., 2015).

Taken together, prompting individuals to adapt a healthy eating pattern is highly challenging. Eating behavior might be as resistant to change as addictive behaviors like smoking or drug abuse (Ceccarini, et al., 2015). In theory,

weight loss should occur as soon as the energy balance is negative (Yumuk, et al., 2015). While this might be true for short-term outcomes, most individuals who lose weight during hospital based interventions, will have regained all weight within 5 years after the intervention (Ceccarini, et al., 2015).

Restrictive diets often produce adverse outcomes such as weight recycling, increased fat storage, the development of eating disorders (e.g. binge eating), and comfort eating (Leng et al., 2016; Hawks et al., 2004). Contrary to classical models, novel research suggests that behaviors aimed to manipulate dietary intake in order to control weight, especially among younger individuals, are directly linked to a higher BMI (Leng, et al., 2016).

Some approaches showing good outcomes for long-term weight control include creating a high level of self-efficacy and self-regulating skills, reinforcing intrinsic motivation rather than extrinsic motivation, and flexible eating restrain (Westenhöfer, et al., 2003). Positive body image has also been shown to be a good predictor for beneficial health behaviors (Teixeira, et al., 2015). Individuals who eat in response to internal cues rather than external cues are more likely to have a healthy eating pattern and a positive relationship with food (Hawks, et al., 2004).

Therefore, rather than focusing on the amount of food or energy balance, exploring the reasons for food intake could be key to understanding causes underlying obesity, and to encourage healthy choices. Motivation seems to be an important mediator in most human behaviors. Thus, understanding why people eat what they eat might be crucial to health policies.

In the present study, an attempt to understand what motivates people's food choices is made. A comparison of attitudes in the United States and Germany is meant to explore if there are major cultural differences between the

two countries. The results are interpreted in light of possible preventive measures.

2. Understanding Motivation

If one wants to investigate motivations for food choice, one first has to understand what motivation is.

As defined by the Oxford English Dictionary, motivation is "*A reason or reasons for acting or behaving in a particular way*" (OED, 2016). In psychology, numerous definitions of motivation exist. Ryan and Deci (2000) stated for example that "to be motivated means to be moved to do something".

Motivation can be described as a psychological construct, which explains behaviors and influences the likelihood of behaviors being pursued. It can act as a mediator between intention and action. Because a high amount of motivation can result in productivity, it is highly valued in society (Ryan & Deci, 2000(1)). However, understanding motivation can be complicated, as humans have unique and individual reasons underlying motivation (Kenrick, 2010).

Because motivation influences many areas of life, it has long been of interest among psychologists. In the early days of behavioral neuroscience, motivation was believed to be entirely physiologic.

Scientists postulated that humans are motivated to certain behaviors to maintain a state of homeostasis. Homeostasis is a regulatory system that uses a set-point to maintain a stable physiologic state (Berridge, 2004). According to this concept, the motivation behind eating would be the maintenance of energy balance. It was assumed that humans are born with "primary drives" (i.e., basic physiological needs). These drives were said to be the foundation for "secondary drives", which develop later in life. Secondary drives were said to be learned by conditioning. For example, children learn to stay with their parents by being fed (satisfying primary drives) (Kenrick,

2010).

2.1. Reinforcement Theories

Classical conditioning as presented by Pavlov (1927) is a model of behavioral modification, induced by association of stimuli (Solomon, 1980). A previously neutral stimulus (NS) (i.e., sound of a bell) is paired with an unconditioned stimulus (UCS) (i.e., food). This result is the being NS associated with the unconditioned response (UCR) (i.e., salivation). After conditioning, the sound of the bell becomes the conditioned stimulus (CS), and salivation becomes the conditioned response (CR). To learn a behavior, two stimuli are linked together (Rescorla, 1988).

Classical conditioning however, was quickly identified as limiting (Bindra, 1978). It is a purely behavioristic approach. No distinction is made between human and animal behavior, and the factor of consciousness is entirely overlooked (Watson, 1913).

Therefore, operant conditioning was proposed as an alternative way of understanding human behavior. This approach introduced reinforcement (i.e., rewards) (Salamone & Correa, 2002). Through positive or negative reinforcement, an association between behavior and its consequences can be made. If a behavior is associated with a positive outcome, it is likely to be pursued (Skinner, 1963).

Classical and operant conditioning are learning theories, not motivation theories. However, reinforcement can also be discussed in relation to motivation; reinforcement can be used to increase motivation (Salamone & Correa, 2002).

2.2. Need Theories

Early behavior theories did not consider the complexity of the human mind (Watson, 1913), or "*intelligent behavior*" (Bindra, 1978). Contrary to this rather reductionist approach, Maslow (1943) rejected the primary drives as a central point of human motivation and proposed that any motivation theory should revolve around "*ultimate or basic goals rather than partial or superficial ones*" (Maslow, 1943). Additionally, he emphasized the differences between human and animal models, stating that animal models are unable to determine the influence of goals and purpose on behavior (Maslow, 1943).

Maslow (1943) proposed a novel model of human needs. It stated that there are multiple, independent motivational systems, and that they form a hierarchy (i.e., pyramid) of needs (Kenrick, 2010).

Maslow supported the classical approach to the extent that the first priority for humans is the maintenance of homeostasis and satisfying biological needs. He said, that if an individual lacks food, safety, love and esteem, it is most likely that the need for food will be prioritized. However, according to Maslow, as soon as the basic needs are satisfied, higher needs will emerge. The satisfaction of each following need will, in turn result in the desire to satisfy even higher needs (Maslow, 1943).

Physiological needs such as the need for oxygen, water, or food form the basis of the pyramid of needs. If those biological needs are fulfilled, safety needs emerge. When humans have satisfied both, physiological and safety needs, the need for love, affection and belongingness arises. Following the satisfaction of love needs, self-esteem needs emerge (Maslow, 1943). Self-esteem needs can be divided in two subgroups; the desire for strength, achievement and confidence, as well as liberty and

freedom (self-esteem), and the desire for prestige, recognition, and attention from important others (esteem of others) (Kenrick, 2010). In Maslow's model, the satisfaction of self-esteem needs, induces feelings of self-confidence and capability, whereas thwarting of those feelings will result in weakness and discouragement (Maslow, 1943).

Even with all the basic needs satisfied, individuals will eventually lack satisfaction and will constantly seek for fulfillment of new needs. Maslow called this the need for self-actualization. This is essentially the need for self-fulfillment. Herein, cognitive needs, such as the desire to know, understand, and explore are incorporated (Maslow, 1943).

According to Maslow, goals are the center-point of any motivational theory. Satisfied needs however no longer have the ability to motivate behavior. For instance, if hunger is satisfied, one will no longer be motivated to look for food and will focus on other needs (Maslow, 1943).

Additionally, Maslow made a clear distinction between motivation theory and behavior theory. Although he acknowledged that behavior is (almost) always motivated, he stated that multiple, factors (e.g. cultural, biological or situational) determine behavior. He acknowledged the degree of motivation as an important factor influencing behavior (Maslow, 1943).

Taken together, it can be concluded that motivation involves a pattern of beliefs, interests, perceptions, values and actions that are interconnected and determine behavior. Motivation influences human behavior, because actions are usually motivated by the desire to fulfill needs. The degree of motivation depends on whether needs are satisfied or not (Maslow, 1943).

2.3. Cognitive Theories

If health behaviors are to be targeted, it is essential to first understand why individuals act in a certain way and second, to understand how they can be moved to change their behavior. Theories of human motivation can lay the foundation for understanding how to influence behaviors.

To successfully design preventive programs, a combination of explanatory theories and change theories is needed because the greatest explanation will not be sufficient to change behavior by itself (Bishop & Glanz, 2010). Theories of human motivation need to be revisited before such measures can be discussed as effective interventions should be theory-driven.

In this chapter, an overview of the motivation theories related to behavior change (i.e., cognitive theories) should be presented.

2.3.1. The Self-determination Theory

Within the self-determination theory (SDT), motivation is defined as "*psychological energy directed toward a goal*" (McSpadden, et al., 2016). Human behavior is purposive, so individuals need clear goals. The SDT acknowledges the differences between self-motivation and external regulation (Ryan & Deci, 2000(1)). Furthermore, measures that can alter the quality of motivation are presented (Ryan & Deci, 2000).

2.3.1.1. Intrinsic Motivation

Intrinsic motivation is the ideal of self-regulated behavior. Individuals, who are intrinsically motivated engage in behaviors because they find them pleasurable and interesting to themselves (Ryan & Deci, 2000); a person, who is intrinsically motivated acts out of enjoyment or personal satisfaction rather than external pressure or rewards. Intrinsically motivated behaviors are the ones that fulfill the psychological needs of competence, autonomy

and relatedness, as well as the need to pursue novelty, challenges, to learn, and to thrive (Ryan & Deci, 2000(1)).

2.3.1.2. Extrinsic Motivation

In contrast, extrinsic motivation occurs when a behavior is motivated by external cues such as earning rewards, avoiding punishment or acting in accordance to social pressure (Wasserkampf, et al., 2014). Many everyday behaviors are externally motivated, especially behaviors such as healthful eating or engaging in physical activity. In fact, most of the behaviors we pursue past early childhood are, to some degree, externally motivated (Ryan & Deci, 2000).

2.3.1.3. Internalization of Extrinsic Motivation

However, extrinsic motivation can vary in its autonomy. Individuals can transform external regulation into their own though internalization. Internalized external motivation is gained through values and self-integration of goals (Ryan & Deci, 2000).

Internalization within the SDT is described as a continuum; one's motivation for a behavior can range from amotivation through passive compliance, to personal commitment (Figure 1) (Ryan & Deci, 2000). With increasing internalization, comes more persistence to carry out the given behavior.

Introjected regulation of extrinsic goals occurs when a behavior is carried out in order to enhance self-esteem, but is still controlled by external factors. It is usually carried out to avoid guilt. However, with introjected regulation the ego is more involved than it is, if the goal is fully external. This kind of regulation has been shown to increase the effort put into achieving goals, yet it also results in more anxiety and poor coping with failure (Ryan & Deci, 2000).

External motivation can be internalized by identification. This occurs when a behavior is valued and self-endorsed. Actions are still carried out because of external pressure

but their personal significance is acknowledged. The more identified the regulation, the more enjoyment and positive coping skills can be observed (Ryan & Deci, 2000).

As shown in Figure 1, external motivation can be internalized if the behavior agrees to one's self-endorsed goals. The only difference between fully integrated extrinsic motivation and intrinsic motivation is that the former describes behaviors that are undertaken for their acknowledged instrumental value, even though they are volitional and appreciated by the self (Ryan & Deci, 2000).

Although it is described in the literature as a motivational continuum, the model presented in Figure 1 does not refer to a progressive continuum. Behaviors that were externally motivated first, can result in developing a genuine personal interest and become internalized over time. On the other hand, behaviors that were initiated out of internal motivation can be externalized under conditions that are perceived as controlling. In most cases, however behaviors become internalized over time (Ryan & Deci, 2000).

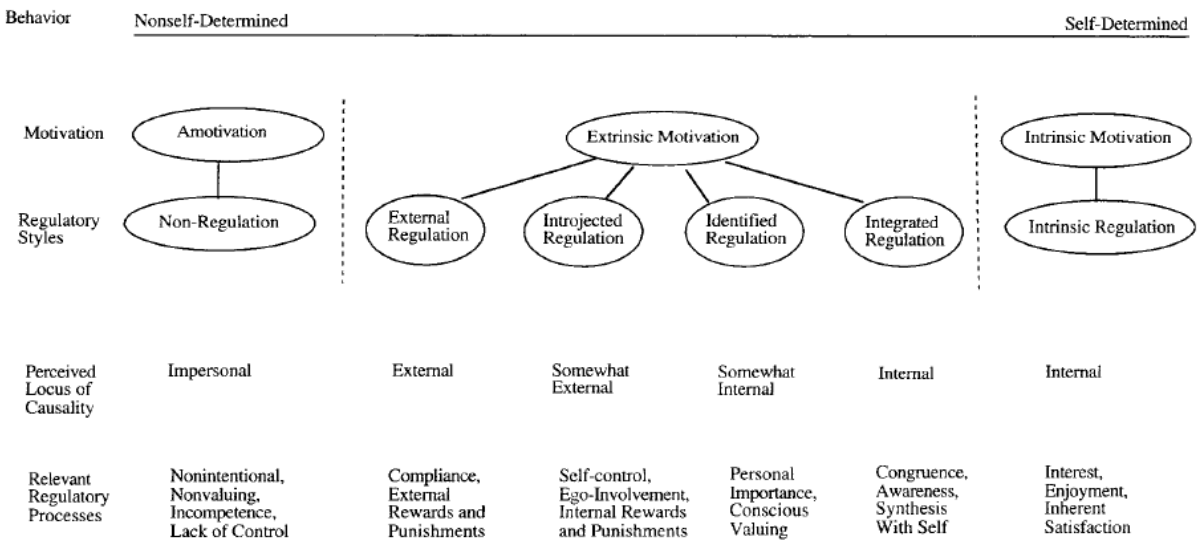

Figure 1 The Self-determination continuum (from Ryan and Deci, 2000)

2.3.1.4. Perceived Locus of Causality

The quality of motivation is additionally influenced by the perceived locus of causality. If individuals feel that actions are in their own control, their motivation will be more internal (Ryan & Deci, 2000). An internal locus of causality, will result in high levels of ability (Castonguay, et al., 2014). An impersonal locus of causality, in contrast, will result in amotivation.

Feelings of being in-control and the ability to choose increase intrinsic motivation, whereas external rewards of any kind undermine intrinsic motivation as they are perceived as controlling (Ryan & Deci, 2000).

2.3.1.5. Relatedness, Competence and Autonomy

An important aspect of the SDT is fulfilling the psychological needs for relatedness, competence and autonomy.

Externally motivated behaviors need to be externally stimulated. Most often such behaviors are motivated by the need to be valued by significant others. Feelings of belongingness to a social group and acceptance from important others (i.e., relatedness) are important elements encouraging internalization of external motivation (Ryan & Deci, 2000).

Furthermore, it is essential that people feel a sense of competence; people are more likely to internalize goals if they understand them and feel they have the relevant skills to pursue a goal (Ryan & Deci, 2000).

However, only if individuals feel a sense of autonomy and are self-determined, can their motivation be integrated rather than just introjected (Ryan & Deci, 2000). Feelings of competence and relatedness might result in externally motivated behaviors to become more introjected; however only feelings of self-determination will lead to integrated motivation (Ryan & Deci, 2000).

2.3.2. The Social-Cognitive Theory

The social cognitive theory (SCT) states that human behavior is acquired by observing social environments, and modelling important others. A successful demonstration of a behavior will increase the desire to replicate it (Bandura, 1991).

Through self-reflection, outcome expectancies are formed. Expectations influence whether behaviors will be pursued or not. That is, humans do not thoughtlessly shift behaviors, depending on the social environment they are in; they will observe others, and self-reflect based on their internal values (Bandura, 1991).

Self-directed goals are formed, based on beliefs about abilities and likely outcomes. Individuals need to believe they are able to execute behaviors, and that the outcomes will yield desirable results. Thus, human behavior is an interaction of external influences and self-reflection (Bandura, 1991).

2.3.2.1. Self-Regulation

Intentions based on observation, will not change a behavior if individuals lack the ability of exercising control over the said behavior. Self-regulation of behavior operates through, self-monitoring of a behavior as well as its determinants and consequences, judgement of one's behavior under consideration of personal standards and environmental circumstances, and self-reaction (Bandura, 1991).

2.3.2.2. Reinforcement

Motivation can be increased through positive or negative reinforcement. Reinforcement can be self-initiated or external. External reinforcement is the way ones' social environment reacts to the new behavior. If the response is positive, it can strengthen the desire to persist in the behavior. Self-induced reinforcement exists, if actions result in feelings of satisfaction and ability. Rewards should not be tangible because they fail to increase internal

motivation as they are external and controlling. Those who reward their accomplishments with self-administered and internally satisfying actions are usually more motivated to perform the desired behavior (Bandura, 1991).

2.3.2.3. Self-Efficacy

Self-efficacy is the confidence in ones' ability to perform and to carry on despite difficulties. Self-efficacy is essential for inducing a high level of internal motivation (Bishop & Glanz, 2010) because to successfully self-regulate behavior, individuals need to believe in their own abilities (Bandura, 1982).

The perceived self-efficacy greatly influences choices, the amount of effort, and how one copes with set-backs. Those, who have strong feelings of ability will assign a failure to lack of effort. This will increase their motivation to pursue a goal. Inefficacious individuals will assign lack of success to their lack of ability, making them more likely to be discouraged and to give up quickly when faced with challenges (Bandura, 1991).

The more self-efficacious a person feels, the higher a goal will be set, and the more commitment and effort will be put into achieving that objective. If one feels a high level of self-efficacy the interest in performing a behavior will be maintained longer because the action is more intrinsically motivated (Bandura, 1982).

2.3.3. The Health Belief Model

The Health Belief Model (HBM) is a motivational construct that explains attitudes towards preventive health behaviors (Champion & Skinner, 2008).

Within the HBM, readiness to take action is influenced by people's beliefs about whether they are at risk or not (Bishop & Glanz, 2010).

Readiness to change is influenced by perceived susceptibility, i.e., one's judgment of the likelihood to experience a health problem and perceived severity, or the

estimated seriousness of a condition (Champion & Skinner, 2008).

Together, these two factors make up the perceived threat which is influenced by knowledge about risk factors. The perceived threat will most likely create pressure to take action; however, it will not induce action itself. Before a person is ready to take action, the risk is weighted against perceived benefits and barriers (Champion & Skinner, 2008).

Perceived benefits are not based on factual evidence; they are shaped by individual beliefs about the behavior. A wide range of factors such as social and cultural influences can impact perceived benefits.

Perceived barriers are usually estimated by comparing the benefits of a behavior to the costs. Those can include actual financial expenses but social and cultural factors also play an important role. Here individuals consider, if their action will be socially accepted, if it will result in embarrassment or physical pain and so forth (Champion & Skinner, 2008).

Having assessed perceived threats, benefits and costs, the likelihood of taking action can be estimated. Yet, a stimulus to take action is necessary for inducing the desired behavior. The cue to action, therefore is the final element of the HBM, those cues can either be internal or external (Champion & Skinner, 2008).

Before a new behavior can be adapted, individuals need to believe that the action will result in a valued outcome, and that they have the ability to pursue it (Rosenstock, et al., 1988). Additionally, feelings of competence to overcome perceived barriers are important for implementing new behaviors (Champion & Skinner, 2008).

2.3.4. The Theory of Planned Behavior

This theoretical construct of human motivation is an extension of the theory of reasoned action (TRA), which was developed to understand relationships between attitudes, intentions, and behavior (Ajzen, 1985).

What distinguishes the theory of planned behavior (TPB) from the TRA, is that it includes the element of perceived control (Kasprzyk & Montaño, 2008). Human behavioral intentions within the TPB are explained by behavioral, normative and control beliefs in relation to attitudes, subjective norms and perception of behavioral control (Ajzen, 2011).

The central motivational factor is the individual's intention to perform a behavior. The stronger and more specific the intention to perform, the more effort will be put into achieving a goal (Ajzen, 1991).

The intention to perform is influenced by two factors: personal and social. A personal factor is one's evaluation of abilities needed to perform the behavior, or the attitude toward the behavior in question (Ajzen, 1985).

The attitude is further determined by beliefs about the outcomes of performing a behavior (behavioral belief). Hence, a positive attitude toward a behavior will result from optimistic beliefs about the outcomes of performing it (Ajzen, 1985).

Subjective norms are perceived social pressures (Ajzen, 1985) and are determined by normative beliefs (Kasprzyk & Montaño, 2008). If a behavior is evaluated positively, and accepted by important others it is most likely to be performed (Ajzen, 1985).

Perceived control is determined by control beliefs regarding the benefits and barriers to perform the desired behavior. Taken together, behavior change can be directly predicted by perceived behavioral control and behavioral

intentions (Ajzen, 1991).

2.3.5. The Transtheoretical Model

This model does not directly incorporate motivation, rather it focuses strictly on behavior change, and the stages individuals go through when adapting a new behavior (Prochaska & Velicer, 1997). It is however, an important tool within the subject of health behavior, and can be used to understand and increase motivation (Ceccarini, et al., 2015).

2.3.5.1. Stages of Change

The transtheoretical model (TTM) postulates that before changing a behavior, individuals will go through six stages of change which are presented in Table 1.

Precontemplation	No intention to take action within the next 6 months
Contemplation	Intends to take action within the next 6 months
Preparation	Intends to take action within the next 30 days
Action	Changed overt behavior for less than 6 months
Maintenance	Changed overt behavior for more than 6 months
Termination	No temptation and 100% confidence

Table 1 Stages of Change (from Prochaska & Velicer, 1997)

2.3.5.2. Processes of Change

When individuals go through the stages of change presented above, processes of change can guide them towards maintenance of the desired behavior (Prochaska & Velicer, 1997).

Consciousness raising is raising awareness about causes and consequences of a negative behavior (Prochaska & Velicer, 1997).

Dramatic relief induces negative emotions that accompany the old behavior (Prochaska & Velicer, 1997).

Self-reevaluation results in the realization of the importance of behavior change for the self, whereas environmental reevaluation weights the negative and/or the positive impact of the new behavior on one's social and physical environment (Prochaska & Velicer, 1997).

Self-liberation is the belief that executing the behavior is

possible and the formation of goals for behavior modification (Prochaska & Velicer, 1997).

Social-liberation is the increase in social opportunities and alternatives (Prochaska & Velicer, 1997).

With counterconditioning, the old behavior is substituted by learning the new, desired behavior (Prochaska & Velicer, 1997).

Cues for old, unhealthy habits are removed by stimulus control, and contingency management. The latter is reinforcing behavior change by providing rewards and recognition (Prochaska & Velicer, 1997).

Finally, helping relationships aid behavior change by creating supportive environments (Prochaska & Velicer, 1997).

Effective strategies to deal with temptation are necessary for long-term success. Continuous re-lapse prevention needs to address problems caused by negative emotions, social influences, and cravings (Prochaska & Velicer, 1997).

2.4. Summary

All the above models can be applied to the study of health motivation, however there are some evident differences. Clearly, the HBM at its core, explains why one takes preventive action, whereas the TTM is a guide to behavioral change. However, even the TTM can be a good tool to understand which motivational stage individuals are in, and how to effectively stimulate them towards changing behavior (Bishop & Glanz, 2010).

At a closer look, it is apparent that most of the motivational theories are centered around similar concepts.

The element of self-efficacy and internal motivation is cited as important for inducing motivation, in nearly all the theories of human motivation. Perceived control over a behavior, and the belief that it can be successfully implemented are more likely to produce positive outcomes. Furthermore, it becomes clear, that pressure and external motives will not increase motivation long-term.

3. Motivational Concepts Applied

Motivational frameworks have been applied to study health behaviors. Results suggest that they can guide health promoting interventions. Literature concerning motivational concepts applied should be briefly discussed in this chapter.

3.1. Conditioning and Habits

Some taste preferences, such as the craving for sweet taste, are in human nature (Brug, 2008). Innate preferences can be altered by conditioning; through life, humans learn to like and dislike foods based on experiences. Usually, foods that are associated with feelings of satiety or other pleasant experiences are the ones that will be liked. Those foods, that are usually high in fat and added sugar, are sometimes described as “comfort foods” (Brug, 2008). Eating behavior is conditioned early in life and quickly becomes habitual (van't Riet, et al., 2011).

Habitual behaviors operate on different conditions than non-habitual behaviors; the decisive process requires little contemplation. Therefore, intentions are believed to be poor predictors of everyday eating behavior (van't Riet, et al., 2011). Individuals often fail to define the motives behind their food choices because the decision process is highly automated (Steptoe & Wardle, 1999). Familiar eating habits are often sustained despite not producing optimal health outcomes (Leng, et al., 2016).

3.2. Intrinsic Motivation and Self-Efficacy

Those, who are internally motivated to eat healthy usually have a healthier eating pattern than those, who try to control their diet for externally motivated goals (Teixeira, et al., 2015). The quality of motivation was found to be decisive in encouraging and maintaining healthy behaviors. What is more, a self-directed motivation to

pursue one health behavior is related to the motivation for other desirable behaviors. For instance, individuals who are autonomously motivated to be physically active, will be more motivated to eat healthy as well (Teixeira, et al., 2011).

There is evidence that rewards and settings that do not increase self-efficacy, are an ineffective method for increasing motivation long-term, as they are perceived as limiting. Such measures fail to induce internalization of motivation, causing individuals to give up their efforts quickly. This is important, since adapting a healthy eating behavior rarely has a personal value to begin with and will, in most cases, be initiated for external reasons. If individuals do not perceive a behavior to be important and enjoyable for themselves, it will most likely not be maintained (Teixeira, et al., 2011).

Research suggests that self-regulatory behaviors alone are poor predictors of lasting change; they are only effective if combined with a high level of self-efficacy. There seems to be a relation between self-efficacy and perceived barriers. That is, those who feel more in-control, are more likely to overcome barriers (Teixeira, et al., 2015) and pursue actions aimed to change behavior (Chang, et al., 2008).

3.3. Social Environments

In all the discussed theories, the social environment plays an important role. By creating supportive networks (Prochaska & Velicer, 1997), positive evaluation from important others (Ajzen, 1991), relatedness (Ryan & Deci, 2000), and observational learning (Bandura, 1991) behaviors can be influenced. In line with this, research found that eating plays a significant role in inter-human relations; the social motive for eating appears to be highly important for many individuals. In fact, social influences

can be stronger predictors for food choices than availability or affordability of foods (Brug, 2008).

The pleasure of eating certain foods can be increased through social environments. A positive attitude towards healthy eating could be strengthened by incorporating health concerns into a network of social reasons for eating (Renner, et al., 2012). Social modelling appears to be especially important among younger individuals (Brug, 2008). The importance of family, culture, (Eikenberry & Smith, 2004) social acceptability and inclusion (Ashton, et al., 2015) are often cited as factors promoting healthy food choices. However social, cultural, and family factors can at the same time be barriers to changes, if the environment is unsupportive (Eikenberry & Smith, 2004).

3.4. Health Beliefs

Research results show that intentions are not necessarily a good predictor for action (Kiviniemi & Brown-Kramer, 2015). That is, knowledge and information are only effective in prompting action, if one feels it is relevant to the self- i.e., susceptible to the risk (Kiviniemi & Brown-Kramer, 2015). Higher levels of risk awareness were found to result in more preventive action, however few individuals perceive themselves susceptible to dietary risks. Many lack the knowledge about diet-disease relationships. Further, knowledge about risks is not always transacted into behavior, because factors like taste and hunger are favored. Preventive action is most likely to be undertaken by those, who hold a strong belief about the ability to control their health (Petrovic & Ritson, 2006), whereas individuals who feel their health is outside their control are less motivated to change eating patterns (Chang, et al., 2008).

3.5. Eating Behavior

Diet changes are frequently motivated by weight loss or health outcomes (Teixeira, et al., 2011). Such goals are

often short-term and unrealistic (Teixeira, et al., 2006). Dietary self-control might be a good predictor of temporary changes, however at least in the case of weight loss, it fails to be effective long-term (Hawks, et al., 2004).

Generally, those who are motivated by weight loss outcomes and desire quick results, are discouraged easily, lose control and engage in emotional eating more frequently (Chang, et al., 2008). There is strong evidence that a more flexible dietary behavior is a good predictor for longstanding health outcomes (Westenhöfer, et al., 2003). A flexible control over eating behavior is associated with more pleasure. Individuals understand the importance of their diet quality, but do not rigidly control their intake. Such behaviors are highly self-determined and allow individuals to enjoy foods, without external pressure. Such a behavior is only pursued, if goals are value-based, and if individuals acknowledge the behavior as important to themselves (Teixeira, et al., 2015).

A more rigidly controlled diet usually stems from external motivation. Thus, it is related to dysfunctional eating, a higher BMI and higher levels of overall concern and anxiety related to eating (McSpadden, et al., 2016).

3.6. Frequently Cited Motives

Research focusing on motivation for eating has determined various motives influencing food choice. The vast amount of possible influences stresses the complexity behind human food choices.

The literature shows, that people are most likely to simply eat the foods they like. Highly palatable foods will be chosen over the less attractive ones. Habits and traditions determine choices to a great extend (Brug, 2008). This is especially important among less health-oriented individuals, who rarely make food choices consciously (van't Riet, et al., 2011). Important aspects in everyday food choices are pleasure seeking, convenience, and

affordability (Steptoe et al., 1995; Renner, et al., 2012).

Health plays a role in food choice, however taste and physiological needs are usually more important (Renner, et al., 2012).

When motives underlying dietary changes are cosidered the motive of and weight control and health emerge as some of the most important ones. However, the desire to feel good, to look good, live longer, treat or prevent a disease seem to play an important role for many individuals as well (Eikenberry & Smith, 2004; Ashton, et al., 2015).

4. Aim of this Study

As presented in the previous chapters, motivation is a comprehensive construct and it greatly influences food choices. Satisfying physiological needs, needs of belongingness, desire for acceptance, pleasure seeking, and emotional states can determine attitudes towards food (Renner, et al., 2012).

An understanding of individual food choices is needed, to design innovative public health interventions, aimed to increase healthy eating behaviors within populations (Hawks, et al., 2003).

Moving past an external health fixation, feelings of guilt, confusion, and pressure will most likely prompt individuals towards a beneficial eating pattern. It can be assumed that such a change will result in more enjoyment of healthy choices, which will result in positive health outcomes (Hawks, et al., 2004).

Population-based strategies are needed to tackle the obesity problem (WHO, 2016). Such interventions differ from individual approaches as they need to reach a wide audience. Understanding motivation behind food choices can determine which approaches will produce the best outcomes in any given population (Bishop & Glanz, 2010). Strategies that produce positive effects within one

population, might not be suitable among other populations, with different attitudes.

A comparison of two nations can determine, if there are major cultural differences. Currently there is no data to determine, if variances in food motivation exist between Germany and the United States of America (USA). In both countries, obesity rates have considerably worsened in the last years despite efforts to change this tendency (Forouzanfar, et al., 2016). Both countries are highly developed (Forouzanfar, et al., 2016), however cultural differences in attitudes towards food exist (Rozin, et al., 2006).

The current work will attempt to close this gap in the literature and examine differences in food motivation between Germany and the USA. By comparing two similarly developed countries, it can be determined whether cultural or environmental influences play a greater role in determining food choices. This might be of importance, especially to prevent the raise of obesity in developing countries.

4.1. Objectives

The objectives of this work are:

First, to develop a questionnaire which allows to identify motives for food choice.

The second aim is to evaluate the questionnaire, and to identify, if any differences in motives for eating exist between Germany and the USA.

The hypothesis is, that there is a significant difference in food motives between Germany and the USA (H1).

Results are interpreted in light of possibilities for prevention. Those are to be based on the motivational concepts discussed beforehand.

Additionally, other factors influencing food motivation will be briefly examined to identify relations between behavior

and motivation. It is hoped, that implications for future research will arise.

5. Country Comparisons in the Literature

5.1. Literature Search

Considering that the current work is intended to determine, whether differences in food motives exist between the USA and Germany, the literature was limited to articles from these countries. Furthermore, only survey or questionnaire-based research, with adult samples was included.

The search was performed through the PubMed database. Search terms were: (health) AND (eating) AND (motivation) AND (Germany) which yielded 55 results; (health) AND (eating) AND (motivation) AND (Unites States), which resulted in 282 articles.

After reviewing the articles, 3 were chosen (see Table 2) as relevant to the current research question.

5.1.1. Selected Works

Author/year	Objective	Population	Results	Country
S. R. Hawks et al., 2003	Comparison of motivation for eating between individuals from two different cultures (USA/Japan)	1218 college students in the US and Japan aged 18+ years	Individuals in the US were more likely to eat for emotional reasons. The Japanese were more likely to eat for physical or environmental reasons. Women and men in the US were more likely to eat in response to watching TV.	USA/ JAP
Rozin et al., 1999	Identify the way food functions in the minds and lives of people from different cultures	Adults and college students from Flemish Belgium, France, USA and Japan	The group associating food most with health and least with pleasure is the Americans. In all four countries, females, seem to be more health-oriented. French and Belgians tend to occupy the pleasure extreme, Americans the health extreme, with the Japanese in between. Americans are the least likely to classify themselves as healthy eaters.	USA/ FR/BEL/ JAP
P. Rozin et al., 2006	Comparing food attitudes in six countries	6000 adults from France, Germany, Italy, Switzerland, the UK, and the USA.	More choices were preferred by in the United States. In Europe, the quality of food was more valued.	USA/ EU

Table 2 Selected Works

5.2. Literature comparing two countries

No articles comparing the eating behavior or motivation between the USA and Germany could be identified. However, three articles comparing food motives in the USA with other countries were found. The articles display some interesting differences between countries.

5.2.1. Food Motivation in the USA compared to Japan

A comparison of eating motives in the USA and Japan (Hawks, et al., 2003) indicates significant differences between factors like emotional eating or environmental reasons for food choices.

The Japanese exhibit less emotional eating but eat in response to physical and environmental cues more often. Environmental eating in Japan however, revolves mostly around internal cues (i.e., visual appeal). The Japanese

were found to be more spontaneous and to find more pleasure in consuming healthy foods (Hawks, et al., 2003).

In the USA, situational eating is intended to ease emotions (i.e., affect regulation). Accordingly, US-Americans tend to distract themselves more while eating. Further, there seems to be a strong cultural concern with weight and health in the USA (Hawks, et al., 2003). Contrary to what might be expected, the restrictive diet behavior among US-Americans does not appear to have the anticipated effects. The authors conclude that it this is due to a dysfunctional relationship with food which in turn can lead to even higher obesity rates (Hawks, et al., 2003).

Moreover, the authors found that the more westernized the Japanese diet becomes, the more eating behavior becomes dysfunctional (i.e., externally regulated). In fact, when comparing Japanese and US-American children, most of the dietary differences cease to exist (Hawks, et al., 2003).

5.2.2. Food Motives in the USA compared to European Countries

Two studies compared the USA to countries in Europe.

The first work (Rozin, et al., 2006) aimed to compare the USA to the United Kingdom, France, Germany, Italy and Switzerland. This comparison however, considered the attitudes towards a variety of food choices and only briefly discussed other differences between the countries. The main finding was, that US-Americans value quantity, whereas Europeans appreciate the quality of food more (Rozin, et al., 2006).

The second work compared food motives in the USA to France and Flemish Belgium (Rozin, et al., 1999).

When one compares US-American and western European attitudes, some differences can be observed (Rozin, et al., 1999).

US-Americans were found to be most likely to associate food with health objectives, and to exhibit a high amount of "food-worry". Those health objectives however are frequently related to superficial goals of slenderness and weight loss. In contrast, the French are largely pleasure-oriented (Rozin, et al., 1999).

It should be noted, however that in comparison to other European countries, the French appear to be the population least concerned with diet and health; they are rather unwilling to change their diet for health reasons (Rozin, et al., 1999).

US-Americans seemingly put more effort into modifying their diet by consuming low-fat or salt-reduced foods. Yet, they are also least likely to consider themselves as healthy eaters (Rozin, et al., 1999).

The authors conclude that an excessive concern with eating well and weight loss can have adverse effects on actual healthful behavior patterns (Rozin, et al., 1999). High levels of external pressure related to eating among US-Americans are assumed to create an unhealthy relationship with food that essentially leads to poor health outcomes (Rozin, et al., 1999).

5.2.3. Summary

Based on the literature, it could be assumed that US-Americans are highly health-oriented, and motivated mainly by external goals. Because they feel pressured to eat in a certain way, they are more likely to lose pleasure in eating and internal motivation. Consequently, they have a more rigidly controlled eating pattern (Hawks, et al., 2003).

Cultural differences which may help explain the different attitudes emerge. For instance, in the USA the most common religion is Protestantism, which can contribute to assigning moral worth to eating (Rozin, et al., 2006).

Furthermore, in US-American culture, individualism is highly appreciated (Rozin, et al., 2006). Individuals see themselves more responsible for both, causes and cures of their health problems. US-Americans usually attribute illness to external causes, while Europeans seem to feel more in-control of their health (Rozin, et al., 1999).

In addition to a high external motivation among USA samples (Rozin, et al., 1999), the quality of food seems to be of less importance. The possibility to customize choices based on individual taste is more important than the quality of foods (Rozin, et al., 2006).

6. Method

6.1. Assessment of Motivation

In order to develop a questionnaire that measures food motivation, existing tools were reviewed as described in detail in this chapter.

6.1.1. Food Choice Questionnaire

A tool frequently used to assess food motivation within the literature is the *Food Choice Questionnaire* (FCQ) (Steptoe, et al., 1995). To design the FCQ, possible motives for food choice were identified based on previous research, and conducting interviews with nutritionists and psychologists.

Furthermore, factors influencing food choices, such as dietary restrain, eating style, the value of health and social desirability were all assessed to design the FCQ (Steptoe, et al., 1995).

As a result, a comprehensive tool measuring motives for food choice has been developed; 36 items representing nine factors were identified. The factors were: *health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity* and *ethical concern* (cited in order of importance). The FCQ has been widely used

since its development and it has proven reliable (Steptoe, et al., 1995).

6.1.2. The Eating Motivation Scale

Over a decade after the development of the FCQ, B. Renner and colleagues (2012) aimed to update the tool based on the newest data on motivation underlying food choice.

The Eating Motivation Scale (TEMS) was developed in three steps. First, the different motives were identified in a similar matter as it was previously done to design the FCQ. A review of the available literature, as well as interviews with experts were performed. Next, the motives were transformed into a questionnaire which was filled out by 1250 German adults. Here the most frequent motives could be identified, and incorporated into the TEMS. Finally, the item set was tested for reliability in a different sample (Renner, et al., 2012).

As a result, 78 items representing 15 factors (*Liking, Habits, Need & Hunger, Health, Convenience, Pleasure, Traditional Eating, Natural Concerns, Sociability, Price, Visual Appear, Weight Control, Affect Regulation, Social Norms,* and *Social Image*) were identified (Renner, et al., 2012).

Clear resemblances between the TEMS and the FCQ questionnaires exist. The TEMS is essentially a modernized version of the FCQ and incorporates such motives as *Liking, Habits, Need & Hunger, Sociability, Social Norms,* and *Social Image* (Renner, et al., 2012) which are not represented in the FCQ (Steptoe, et al., 1995).

6.2. Questionnaire in this study

6.2.1. Assessment of Motivation in this Study

Because the aim of this study was to identify motives for food choice, the TEMS (Renner, et al., 2012) was used with

permission of the author of the questionnaire (Attachment 7).

This instrument was previously applied in a German population and it will be of special interest, if results can be replicated.

The TEMS questionnaire is structured so that participants complete the sentence "*I eat what I eat because…"* and chose possible answers on a 3-point scale with 1 being "never" and 3 "always". Originally the scale ranged from 1 to 7 (Renner, et al., 2012), however, for the purpose of this work the scale was reduced to 3 points. This simplification was undertaken in order to reduce the burden on study subjects. All 78 items represented in the TEMS were assessed in the current study.

6.2.2. Assessment of Additional Variables

Additional variables were briefly assessed to explore possible influences on food choice.

6.2.2.1. Health Consciousness

Health consciousness consist of perceived health responsibility and health motivation (Hong, 2011).

Health responsibility usually results in more healthy behaviors as individuals feel more self-efficacious in actively influencing their health (Hong, 2011). Health conscious individuals might be more motivated to eat healthy, as they might have stronger beliefs about the importance of such behaviors (Prochaska & Velicer, 1997).

Health motivation predicts engagement in preventive behaviors and influences health-related information seeking behavior (Dutta-Bergman, 2004). Those with a higher health motivation, exhibit a higher self-efficacy for maintaining healthy behaviors (Jayanti & Burns, 1889). Even behaviors that are initiated for external reasons (e.g.

a healthy diet), can be internalized if their importance is valued by the individual (Ryan & Deci, 2000).

Based on this evidence, the first set of supplementary questions was aimed to briefly measure health consciousness.

An overview of questions and the sources is presented in Table 3.

For measuring health responsibility of individuals, the questions "*I only worry about my health when I get sick*" [3-point scale], "*It is the doctor's job to keep me well.*" and "*My health is outside my control.*" [2-point scale] (Kraft & Goodell, 1993 in Hong, 2011) and the questions "*Eating right, exercising, and taking preventive measures will keep me healthy for life*", "*I do everything I can to stay healthy*", and "*My health depends on how well I take care of myself*" [3-point scale] (Dutta-Bergman, 2004) were assessed on a true/false (2-point) or agree/disagree (3-point) scales.

For health motivation assessment, the questions "*I am concerned about my health and try to take action to prevent illness.*", "*Because there are so many illnesses that can hurt me these days, I am not going to worry about them.*" and "*I would rather enjoy life than try to make sure I am not exposing myself to a health hazard.*" (Jayanti & Burns, 1889) were assessed on a 3-point agree-disagree scale.

Source	Measure	Questions	Scale
Kraft & Goodell, 1993	Health Responsibility	• I only worry about my health when I get sick • It is the doctor's job to keep me well • My health is outside my control	2- or 3-point
Dutta-Bergman, 2004	Health Responsibility	• Eating right, exercising, and taking preventive measures will keep me healthy for life • I do everything I can to stay healthy • My health depends on how well I take care of myself	3-point
Jayanti & Burns, 1889	Health Motivation	• I am concerned about my health and try to take action to prevent illness. • Because there are so many illnesses that can hurt me these days, I am not going to worry about them • I would rather enjoy life than try to make sure I am not exposing myself to a health hazard	3-point

Table 3 Scales used to assess health consciousness

6.2.2.2. Locus of Control

Locus of control has been found to be a predictive factor for health behavior in combination with other measures (Wallston & Wallston, 1987). An external locus of control results in amotivation and those who feel in-control of their behavior are more likely to pursue it (Ryan & Deci, 2000).

The second set of complementary questions aimed to collect data about locus of health control. The following questions were assessed on a true/false scale: "*When I make my mind up, I can always resist temptation and keep control of my behavior.*" (Reid & Ware, 1974) [internal control], "*My food choices are frequently determined by other people*", [powerful others control] "*My health is determined by my own actions.*" [internal control] (Levenson, 1973).

6.2.2.2.1. Influence of Important Others

The influence of important others plays an important role in behavior change (Ajzen, 1991). Social reasons for eating have a large impact on food choices (Brug, 2008). How others perceive a behavior can determine whether behaviors are pursued or not, especially among less self-efficacious individuals (Ryan & Deci, 2000).

The influence of others was measured by asking the following questions on a 3-potint agree-disagree scale:

"*My friends and family encourage me to eat healthy*", "*I often lose motivation to eat healthy in social situations*", "*I would eat healthier, if the people around me did so too*", "*I feel embarrassed if I don't eat what my friends and family eat*", "*Sometimes I eat unhealthy food because I don't want to feel left out*", "*I am afraid that other people will make fun of me because of my food choices*" and finally "*I know that if I changed my diet, my friends and family would support me*". The questions were borrowed from works of Halpert

& Hill, 2011; Walthouwer et al., 2015; Levenson, 1973; Reid & Ware, 1974.

Additionally, the question "*Most people who are important to me*" was assessed on a 6-point scale (*Think eating healthy is important/Eat healthy/Encourage me to eat healthy/Don't think eating healthy is important/Don't eat healthy/Encourage me to eat unhealthy foods*) (Walthouwer, et al., 2015).

6.2.2.3. Food Frequency Questionnaire

How motivation influences food intake can give insight into the translation of intentions into behavior (McSpadden, et al., 2016).

A reduced version of the Food Choice Questionnaire (FFQ) (Hu, et al., 1999) was used to assess food intake of participants. The intake of fruit and vegetables, grain and potato products, meat, dairy, animal and vegetable fats, sweets, snack foods, and sweetened beverages was measured. The frequency of intake was measured on a 6-point scale with 1 being *never (or less than once/month)* and 6 being *6+ per day*.

Complementary to the FFQ a 2-point yes/no question about the intake of nutritional supplements was asked and the frequency of at-home meal preparation was assessed on a 5-point scale (1=every day and 5=never).

Furthermore, the adherence to a specific diet was explored ("*Are you currently on a special diet?*"). The specific kind of diet was assessed with a multiple-choice question. Possible answers were: gluten-free, low-carbohydrate, vegetarian, vegan, lactose-free, low-fat, weight-loss (calorie restricted), and other.

6.2.2.4. Dietary History and Body Satisfaction

Evidence exists, suggesting a negative relationship between diet behavior, body dissatisfaction and health outcomes (e.g.: Teixeira et al., 2011; Hawks et al., 2004; Leng et al., 2016).

Diet history and body dissatisfaction was briefly assessed by "true or false" questions.

The diet-related questions were "*I have been on a weight loss diet at some point in my life*" and "*I want to lose weight*", whereas body satisfaction was attained with the questions "*I am happy with my body*", "*I am happy with the way I look*" (Heatherton & Polivy, 1991).

6.2.2.5. Source of Health Information

The kind of information seeking can predict the extent to which individuals actively pursue health behaviors. Individuals with strong health beliefs, more frequently choose active communication channels (e.g. the Internet, print media or interpersonal communication) (Dutta-Bergman, 2004). The likelihood of taking preventive measures is increased with knowledge about the risks (Champion & Skinner, 2008),

Therefore, this measure was included in the current questionnaire. The source of health information was measured by asking the question "*My main source of health information is:*" with the answer options "The Internet", "print media", "TV and radio", "Health care professionals", "Friends and family" or "Other". It was possible to choose "All of the above" as well.

6.2.3. Demographic Data

Demographic data that was collected was: gender, age, height and weight (to compute BMI), nationality and ethnicity (or immigration background in the German version of the questionnaire), highest level of education, employment status and marital status.

6.2.4. Informed Consent and Ethical Approval

An informed consent was signed by every participant before completing the survey (Attachment 5; Attachment 6).

The author of this work made sure that all responses remained anonymous and no personal data, that would allow identification of the participants, was collected.

An application for ethics approval was handed in to the ethics committee *Competence Center Gesundheit CCG* at the University of Applied Sciences, Hamburg, Germany on January 16th 2017 (Attachment 4).

Permission to perform the study was granted by the ethics committee on March 18th 2017 (Attachment 3).

6.2.5. Response Collection

The questionnaire in this study was online-based. *SurveyMonkey* software was used to collect responses.

For the purpose of assessing data from both German and US-American participants, two versions of the questionnaire were available: one in German (Attachment 9) and one in English (Attachment 8). The links to the different versions were distributed accordingly.

6.2.6. Duration

Both surveys launched on March, 19th, 2017. The German version of the questionnaire was available for 11 days. The English version remained open for a total of 4 weeks and closed on April 18th, 2017.

6.2.7. Study Setting

Participants were reached through: mailing lists of the University of Applied Sciences Hamburg, Germany; the Wellness Forum Health in Columbus, Ohio, USA; Facebook groups; and the author's personal contacts.

6.2.8. Study Population

Inclusion criteria were: nationality (German or US-American), and age (18 years or older).

No other inclusion criteria were applied. However, because the tool was online-based, every participant was required to have access to a computer, laptop, tablet or smartphone with internet access.

6.3. Statistical Analysis

All data was analyzed with the *Statistical Package for the Social Sciences* (SPSS) software for Mac, version 24.0 (IBM Corp., 2016). A selection of graphs was designed using *Microsoft Excel* for Mac, version 15.29 (Microsoft, 2016).

6.3.1. Data input

Data from both versions of the questionnaire was downloaded from the *SurveyMonkey* platform as an .xls file and imported into SPSS. Three datasets emerged; responses from Germans, responses from US-Americans, and finally all responses combined into one file.

6.3.2. Demographic Data

Descriptive statistics were used to explore demographic data.

6.3.2.1. BMI Calculation

BMI was calculated with the formula kg/m^2 (WHO, 2017). The BMI variable was then divided into 4 classes. All participants with a BMI of less than 18.5 were grouped into the “underweight” category, those with a BMI between 18.5 and 24.9 were grouped into the “normal weight” category. Those who had a BMI between 25.0 and 29.9 were categorized as “overweight”, and all those who had a BMI higher than 29.9 were classified as “obese” (WHO, 2017).

6.3.3. Motives for Food Choice

The 78 variables were recoded into 15 factors according to the source cited (Renner, et al., 2012). See Attachment 2 for more details.

The independent samples t-test for equality of means was conducted to test the hypothesis that there is a difference in motivations for food choice between Germany and USA (H1).

The Independent samples t-test identifies whether significant differences between two means collected from independent samples exist (Field, 2013).

The significance was based on the $p < .05$ level (i.e., results with a $p < .05$ are significant).

A confidence interval (CI) of 95% was used. The CI defines a range of values that, with a probability of 95%, contain the true value (Field, 2013).

Additionally, as recommended by Field (2013), effect sizes (ES) were computed by the Cohen's d formula, to calculate the strength of association.

6.3.4. Additional Variables

6.3.4.1. Health Consciousness

Variables were recoded according to the sources described in the previous chapter.

Differences between nationalities were explored with Pearson's chi-square test.

The one-way analysis of variances (ANOVA) test was performed to identify differences between groups for health responsibility and health motivation. An ANOVA reveals whether significant differences between group means exist (Field, 2013).

The CI was 95% and the significance level was .05 for all tests.

6.3.4.2. Locus of Control

Two locus of control scales were built; the internal control consisting of two questions, and the control of others consisting of one question.

To examine whether significant differences between nationalities exist, a chi-square statistic was run.

To verify if significant differences exist in motives for food choice between the group with a high and low locus of internal control, and for a high and low control of important others, an independent sample t-test was performed.

CI were 95% and the significance level .05.

6.3.4.3. Influence of Important Others

All questions were computed into the "*important others*" variable. A chi-square statistic was performed to identify differences between two nationalities.

The influence of important others on motives for food choice was analyzed with a one-way ANOVA.

CI was 95% and the significance level was at .05.

6.3.4.4. Food Frequency Questionnaire

The FFQ variables were recoded in reference to intake recommendations of the U.S. Department of Health and Human Services and U.S. Department of Agriculture (USDA, 2015), the American Heart Association (AHA, 2016), and the German Nutrition Society (DGE, 2013). The variables were grouped by "meets recommendations" and "does not meet recommendations".

Significant differences between nationalities were explored with the chi-square statistic.

The relationship between dietary intake and motives for food choice was analyzed with the one-way ANOVA test.

The Pearson's chi- square test was executed to identify if there is a relationship between supplement intake and nationality.

6.3.4.5. Dietary History and Body Satisfaction

The relation between special diet and nationality was identified with a Pearson's chi-square test.

The relation between dietary behavior and BMI, and between body satisfaction and BMI was determined with a Pearson's chi-square test.

6.3.4.6. Source of Health Information

The association between source of health information and motives for food choice was estimated with a one-way ANOVA.

The CI and the significance level for all tests was 95% and .05 respectively.

7. Results

7.1. Response Rate and Sample Size

On April, 30th, 2017, a total of 204 responses to the German questionnaire were collected. At this point the collector was closed due to an uneven amount of responses to the two questionnaires.

The English version remained open for a total of 4 weeks. On April, 18th 2017, a total of 187 responses was collected.

Taken together, the study population consisted of 391 German and US-American adults.

After closer examination, a total of 121 invalid responses was identified. Subjects who did not complete the question regarding eating motivation were excluded as the data was of no significance for the current research question. After adjusting, 151 German and 119 US-American participants remained (n=270).

7.2. Demographic Data

The study population consisted of more females than males. Overall, the female participants made up 69.6% (n=188) of the study population. Differences between countries are presented in Table 4.

			Gender		
			Female	Male	Total
Nationality	Germany	Count	105	46	151
		% within Nationality	69.5%	30.5%	100.0%
		% within Gender	55.9%	56.1%	55.9%
	USA	Count	83	36	119
		% within Nationality	69.7%	30.3%	100.0%
		% within Gender	44.1%	43.9%	44.1%
Total		Count	188	82	270
		% within Nationality	69.6%	30.4%	100.0%
		% within Gender	100.0%	100.0%	100.0%

Table 4 Gender Distribution by Nationality

Age distribution was uneven, with only 24.4% of all participants being older than 34 years (Figure 2).

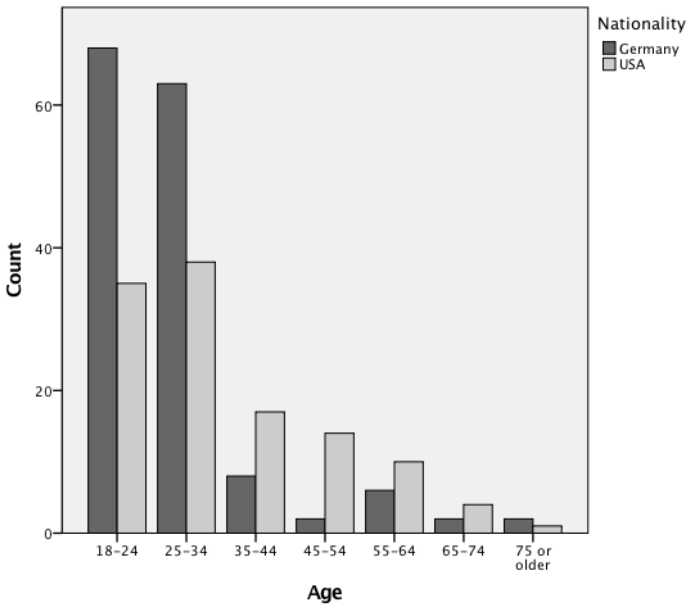

Figure 2 Age by nationality

Most participants had some sort of higher education; only 24% said they had not achieved a university degree, and 29% of the whole sample were enrolled students.

Of the remaining participants, 27.14% had a bachelor's degree, 13% a master's degree and 6.7% had achieved a doctoral or other degree beyond a master's degree (see Figures 3 and 4 for more details).

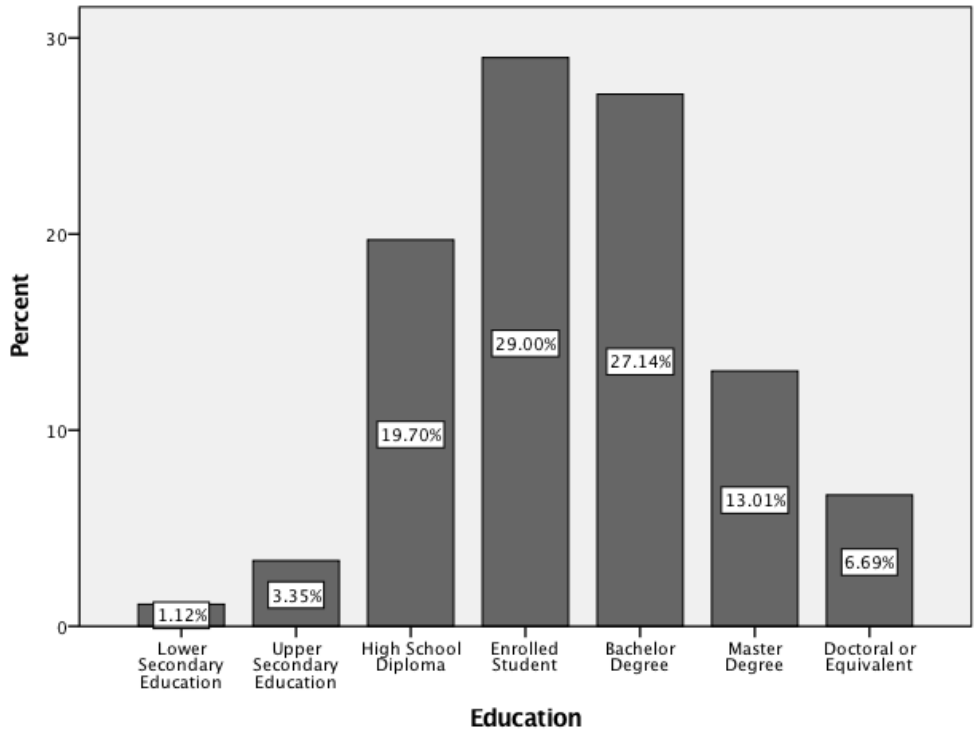

Figure 3 Education within the whole sample

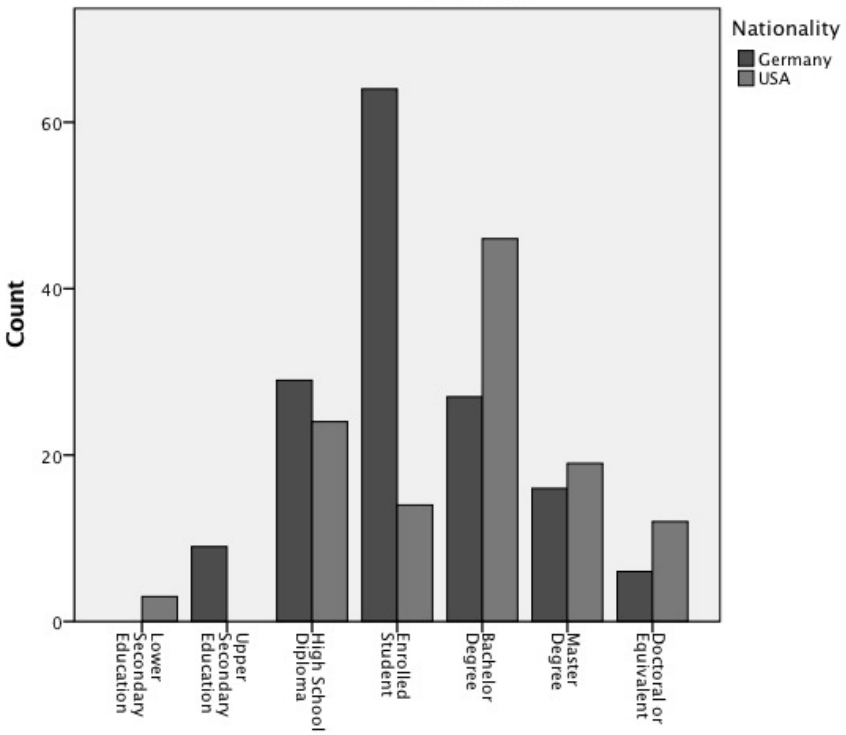

Figure 4 Education by nationality

In this sample, 7.8% of the participants were unemployed, 2.2% were retired and 24.8% were full-time students. Of those working, 38.1% were employed full-time and 19.6% part-time. The remaining participants were self-employed (4.8%) or in official positions (1.1%). There were some differences between nationalities; more Germans said they were currently students, while more US-Americans said they were employed full-time. In the USA sample, there were more unemployed individuals than in the German sample (Figure 5).

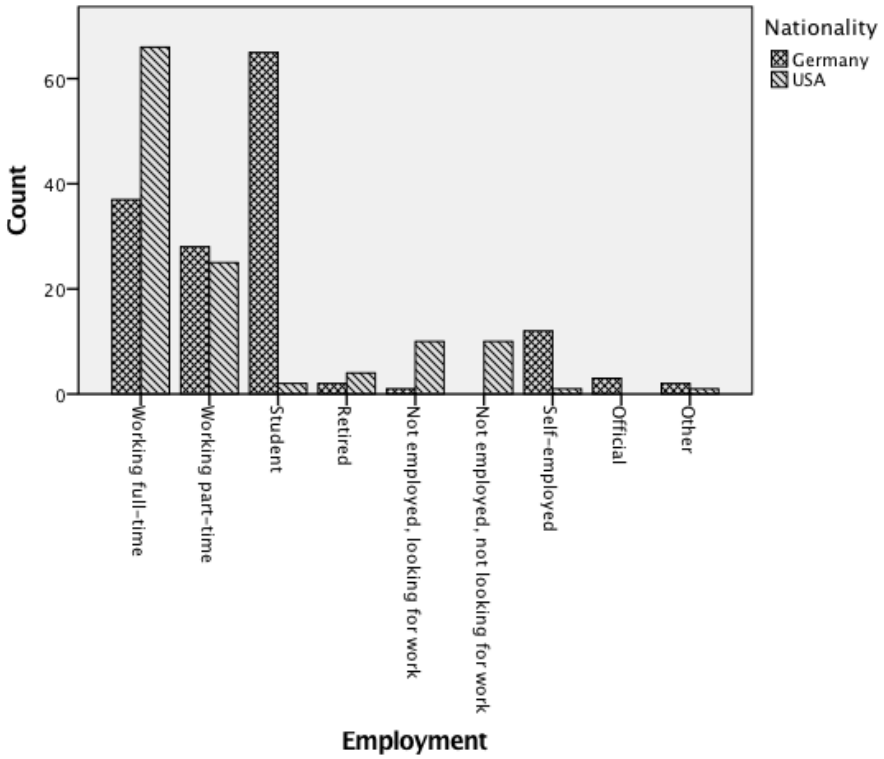

Figure 5 Employment Status by Nationality

The majority of the participants in this sample (70%) was single.

The mean BMI of all participants was 24. 18.9% were overweight and 8.1% were obese. 4.1% of the sample was underweight. There was a significant difference between countries (p= .040), with US-Americans more likely to be obese but no major differences between countries could be observed for overweight (Table 5).

			Underweight	Normal Weight	Overweight	Obese	Total
Nationality	Germany	Count	7	108	30	6	151
		% within Nationality	4.6%	71.5%	19.9%	4.0%	100.0%
		% of Total	2.6%	40.3%	11.2%	2.2%	56.3%
	USA	Count	4	76	21	16	117
		% within Nationality	3.4%	65.0%	17.9%	13.7%	100.0%
		% of Total	1.5%	28.4%	7.8%	6.0%	43.7%
Total		Count	11	184	51	22	268
		% within Nationality	4.1%	68.7%	19.0%	8.2%	100.0%
		% of Total	4.1%	68.7%	19.0%	8.2%	100.0%

Table 5 BMI classification by nationality

Within the whole sample, 18.1% of the participants had some sort of immigration background.

7.3. Food Motivation

Mean values for the whole sample are presented Table 6 and Figure 6.

The motive that emerged as most important in this sample was *Liking*.

Other motives that scored high for both nationalities were: *Need and Hunger, Health, Habits, Pleasure,* and *Convenience*.

The least important motives were *Social Image, Social Norms, Affect Regulation*, and *Weight Control.*

Statistics

	N			Std. Error of						
	Valid	Missing	Mean	Mean	Mode	Std. Deviation	Variance	Range	Minimum	Maximum
Social image	270	0	1.2467	.01775	1.20	.29172	.085	2.80	.20	3.00
Social norms	270	0	1.4556	.02031	1.33	.33377	.111	2.33	.17	2.50
Liking	270	0	2.6052	.02225	3.00	.36559	.134	2.00	1.00	3.00
Habits	268	2	2.0672	.02333	2.00	.38198	.146	2.00	1.00	3.00
Need and hunger	270	0	2.1806	.02269	2.25	.37280	.139	2.25	.75	3.00
Health	270	0	2.1185	.02760	2.00	.45352	.206	2.20	.80	3.00
Convenience	269	1	2.0565	.02136	2.00	.35038	.123	1.80	1.20	3.00
Pleasure	270	0	2.0674	.02149	2.00	.35307	.125	2.40	.60	3.00
Traditional eating	270	0	1.8713	.02229	2.00	.36628	.134	2.50	.50	3.00
Natural concerns	269	1	1.7985	.03031	2.00	.49715	.247	2.60	.40	3.00
Sociability	269	1	1.8711	.02510	2.00	.41168	.169	2.67	.33	3.00
Price	270	0	1.8531	.02541	2.00	.41753	.174	2.67	.33	3.00
Visual appeal	270	0	1.7415	.02064	1.80	.33923	.115	2.20	.60	2.80
Weight control	270	0	1.5948	.02599	2.00	.42711	.182	2.00	.80	2.80
Affect regulation	270	0	1.5265	.02598	1.33	.42682	.182	2.83	.17	3.00

Table 6 Frequencies within entire sample

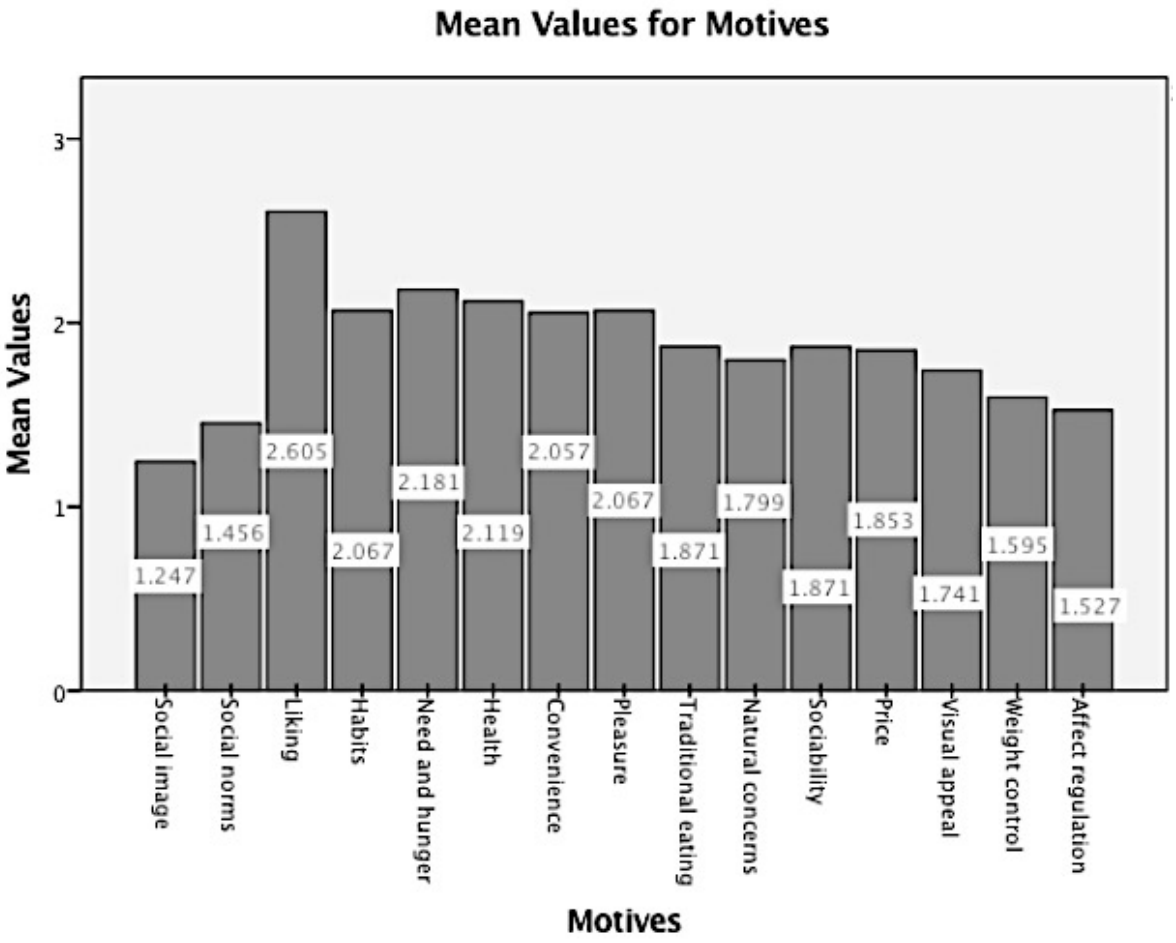

Figure 6 Mean Statistics within Entire Sample

7.3.1. Differences Between Nationalities

Group statistics are presented in Table 7. Results of the independent samples t-test are presented in Table 8.

Six out of the fifteen possible motives for food choice differed significantly between Germans and US-Americans.

The motives that scored significantly higher among the German sample were *Liking* (mean difference .17155 (CI 95% [.08273, .26037]), t (251.015) = 3.807, p=.000), and *Natural Concerns* (mean difference .15738 (CI 95% [.03645, .27831]), t (234.692) = 2,564, p= .011). ES for both motives was medium (d=.52, and d=.33 respectively).

Among the USA sample the motives of *Convenience* (mean difference -.10164 (CI 95% [-.18567, -.01761]), t (267) = -2.381, p= .018), and *Affect Regulation* (mean difference -.10280 (CI 95% [-.20525, -.00034]), t (268) = -1.975, p=0.49) scored higher. However, ES for both was fairly small (d=.29, and d=.24 respectively). The motives of *Social Image* (mean difference -.09086 (CI 95% [-.16269, -.01903]), t (218.312) = -2.493, p=.013) at a medium ES (d=.34), and *Social Norms* (mean difference -.22973 (CI 95% [-.30922, -.15023]), t (196.446) = -5.699, p= .000) at a large ES (d=.81) also scored higher in the USA sample.

For more details on the computed effect sizes see Table 9.

Group Statistics					
	Nationality	N	Mean	Std. Deviation	Std. Error Mean
Liking	**Germany**	**151**	**2.6808**	**.30999**	**.02523**
	USA	**119**	**2.5092**	**.40735**	**.03734**
Habits	Germany	151	2.0618	.40167	.03269
	USA	117	2.0741	.35655	.03296
Need and hunger	Germany	151	2.1755	.37170	.03025
	USA	119	2.1870	.37566	.03444
Health	Germany	151	2.1152	.42044	.03421
	USA	119	2.1227	.49411	.04529
Convenience	**Germany**	**151**	**2.0119**	**.35117**	**.02858**
	USA	**118**	**2.1136**	**.34242**	**.03152**
Pleasure	Germany	151	2.0384	.34310	.02792
	USA	119	2.1042	.36346	.03332
Traditional eating	Germany	151	1.8990	.35140	.02860
	USA	119	1.8361	.38295	.03510
Natural concerns	**Germany**	**151**	**1.8675**	**.46354**	**.03772**
	USA	**118**	**1.7102**	**.52597**	**.04842**
Sociability	Germany	151	1.8874	.41480	.03376
	USA	118	1.8503	.40847	.03760
Price	Germany	151	1.8135	.39060	.03179
	USA	119	1.9034	.44600	.04088
Visual appeal	Germany	151	1.7417	.33513	.02727
	USA	119	1.7412	.34578	.03170
Weight control	Germany	151	1.6159	.43667	.03554
	USA	119	1.5681	.41496	.03804
Affect regulation	**Germany**	**151**	**1.4812**	**.39886**	**.03246**
	USA	**119**	**1.5840**	**.45508**	**.04172**
Social norms	**Germany**	**151**	**1.3543**	**.25262**	**.02056**
	USA	**119**	**1.5840**	**.37824**	**.03467**
Social image	**Germany**	**151**	**1.2066**	**.25447**	**.02071**
	USA	**119**	**1.2975**	**.32715**	**.02999**

Note: (lines in bold are significant results)

Table 7 Group statistics

	Independent Samples Test						
	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Liking	**3.807**	**215.051**	**.000**	**.17155**	**.04506**	**.08273**	**.26037**
Habits	-.260	266	.795	-.01226	.04713	-.10506	.08053
Need and hunger	-.251	268	.802	-.01148	.04578	-.10161	.07865
Health	-.134	268	.894	-.00746	.05569	-.11711	.10220
Convenience	**-2.381**	**267**	**.018**	**-.10164**	**.04268**	**-.18567**	**-.01761**
Pleasure	-1.524	268	.129	-.06579	.04317	-.15079	.01921
Traditional eating	1.403	268	.162	.06287	.04482	-.02537	.15111
Natural concern	**2.564**	**234.692**	**.011**	**.15738**	**.06138**	**.03645**	**.27831**
Sociability	.733	267	.464	.03713	.05063	-.06254	.13681
Price	-1.763	268	.079	-.08990	.05098	-.19027	.01048
Visual appeal	.013	268	.990	.00055	.04166	-.08148	.08257
Weight control	.913	268	.362	.04783	.05237	-.05529	.15094
Affect regulation	**-1.975**	**268**	**.049**	**-.10280**	**.05204**	**-.20525**	**-.00034**
Social norms	**-5.699**	**196.446**	**.000**	**-.22973**	**.04031**	**-.30922**	**-.15023**
Social image	**-2.493**	**218.312**	**.013**	**-.09086**	**.03644**	**-.16269**	**-.01903**

Note: (lines in bold are significant results)

Table 8 Independent t-test

The other factors influencing food choice, namely: *Habits, Need and Hunger, Health Pleasure, Traditional Eating, Sociability, Price, Visual Appear*, and *Weight Control* did not differ significantly between nationalities and all ES were small (Table 9).

	Cohen's d	Effect size
Liking	0.52	Medium
Habits	0.03	Small
Need and Hunger	0.03	Small
Health	0.02	Small
Convenience	0.29	Small
Pleasure	0.19	Small
Traditional eating	0.17	Small
Natural concerns	0.33	Medium
Sociability	0.09	Small
Price	0.21	Small
Visual appeal	0.00	Small
Weight control	0.11	Small
Affect regulation	0.24	Small
Social norms	0.81	Large
Social image	0.34	Medium

Table 9 Effect sizes (ES)

7.4. Additional Variables

7.4.1. Health Consciousness

77% of the sample were in the high health-responsibility group.

There were no significant differences between nationalities.

The one-way ANOVA revealed significant correlations with the motives of *Need and Hunger* (p=.000), *Health* (p=.000), *Convenience* (p=.005), *Traditional Eating* (p=.032), *Natural Concerns* (p=.025), *Price* (p=.041), and *Visual Appeal* (p=.041).

Those who were more health-responsible valued the motives *Natural Concerns, Health*, and *Need and Hunger* more than those who scored lower on the scale of health consciousness.

The motives of *Price, Convenience, Traditional Eating*, and *Visual Appeal* tended to be less important for the more health-oriented individuals in this sample (Table 10).

		Sum of Squares	df	Mean Square	F	Sig.
Liking	Between Groups	1.391	9	.155	1.162	.320
	Within Groups	34.562	260	.133		
	Total	35.953	269			
Habits	Between Groups	2.136	9	.237	1.663	.098
	Within Groups	36.822	258	.143		
	Total	38.958	267			
Need_and_hunger	Between Groups	4.445	9	.494	3.898	.000
	Within Groups	32.940	260	.127		
	Total	37.385	269			
Health	Between Groups	13.183	9	1.465	9.037	.000
	Within Groups	42.145	260	.162		
	Total	55.327	269			
Convenience	Between Groups	2.815	9	.313	2.693	.005
	Within Groups	30.086	259	.116		
	Total	32.901	268			
Pleasure	Between Groups	1.515	9	.168	1.366	.204
	Within Groups	32.019	260	.123		
	Total	33.533	269			
Traditional_eating	Between Groups	2.424	9	.269	2.080	.032
	Within Groups	33.666	260	.129		
	Total	36.090	269			
Natural_concerns	Between Groups	4.644	9	.516	2.170	.025
	Within Groups	61.596	259	.238		
	Total	66.239	268			
Sociability	Between Groups	2.665	9	.296	1.794	.070
	Within Groups	42.756	259	.165		
	Total	45.421	268			
Price	Between Groups	3.018	9	.335	1.987	.041
	Within Groups	43.876	260	.169		
	Total	46.895	269			
Visual_appeal	Between Groups	1.990	9	.221	1.984	.041
	Within Groups	28.966	260	.111		
	Total	30.955	269			
Weight_control	Between Groups	1.875	9	.208	1.148	.329
	Within Groups	47.198	260	.182		
	Total	49.073	269			
Affect_regulation	Between Groups	2.699	9	.300	1.684	.093
	Within Groups	46.305	260	.178		
	Total	49.004	269			
Social_norms	Between Groups	1.028	9	.114	1.026	.420
	Within Groups	28.939	260	.111		
	Total	29.967	269			
Social_image	Between Groups	.631	9	.070	.819	.599
	Within Groups	22.261	260	.086		
	Total	22.892	269			

*Table 10 One-Way ANOVA health responsibility*motives for food choice*

74.7% of the participants were found to have a high health motivation.

US-Americans scored significantly higher on this scale (X^2 (6) = 29.336, p= .000) (Figure 7).

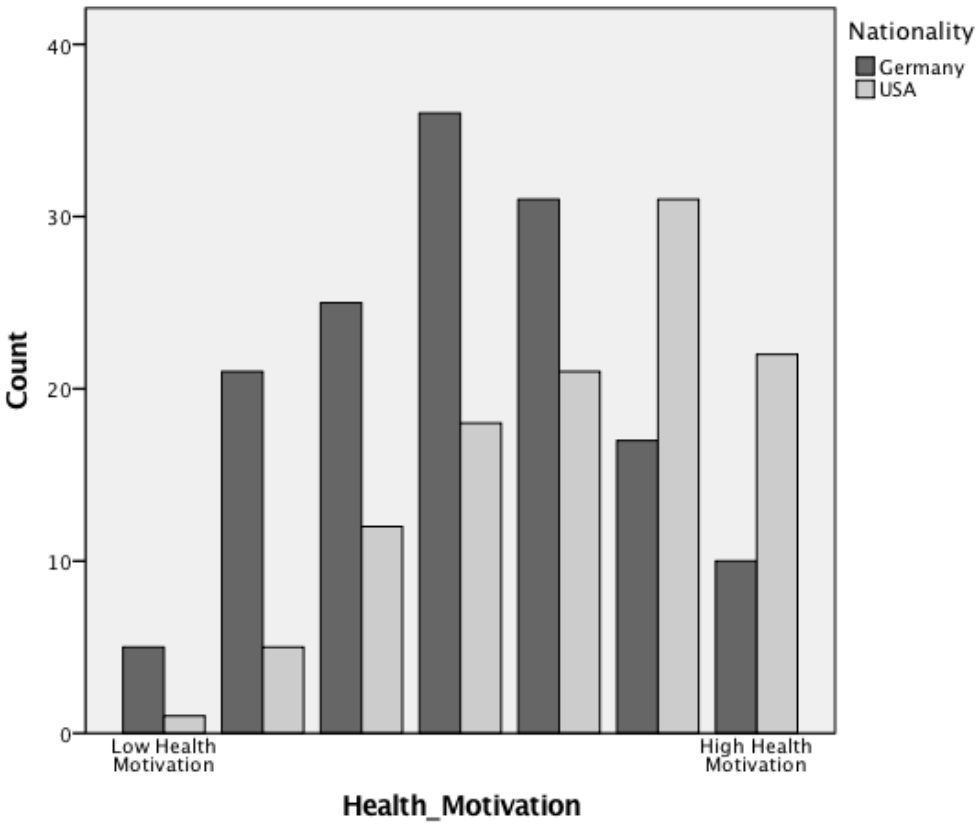

Figure 7 Health Motivation by Nationality

Health motivation significantly influenced the motives of *Health* (p=.000) and *Natural Concerns* (p=.015).

Those who scored higher on the health motivations scale, valued the motives of *Health* and *Natural Concerns* more when compared to those who scored low on the health motivations scale (Table 11).

		Sum of Squares	df	Mean Square	F	Sig.
Liking	Between Groups	.954	6	.159	1.257	.278
	Within Groups	31.383	248	.127		
	Total	32.337	254			
Habits	Between Groups	1.345	6	.224	1.559	.160
	Within Groups	35.517	247	.144		
	Total	36.862	253			
Need_and_hunger	Between Groups	.519	6	.087	.666	.678
	Within Groups	32.247	248	.130		
	Total	32.766	254			
Health	Between Groups	6.243	6	1.040	6.044	.000
	Within Groups	42.691	248	.172		
	Total	48.934	254			
Convenience	Between Groups	.296	6	.049	.400	.879
	Within Groups	30.537	248	.123		
	Total	30.832	254			
Pleasure	Between Groups	.405	6	.067	.583	.744
	Within Groups	28.700	248	.116		
	Total	29.105	254			
Traditional_eating	Between Groups	.785	6	.131	1.008	.421
	Within Groups	32.189	248	.130		
	Total	32.974	254			
Natural_concerns	Between Groups	3.849	6	.641	2.678	.015
	Within Groups	59.401	248	.240		
	Total	63.249	254			
Sociability	Between Groups	1.443	6	.241	1.411	.211
	Within Groups	42.288	248	.171		
	Total	43.731	254			
Price	Between Groups	.206	6	.034	.206	.975
	Within Groups	41.375	248	.167		
	Total	41.581	254			
Visual_appeal	Between Groups	.959	6	.160	1.488	.183
	Within Groups	26.638	248	.107		
	Total	27.597	254			
Weight_control	Between Groups	.750	6	.125	.684	.663
	Within Groups	45.329	248	.183		
	Total	46.079	254			
Affect_regulation	Between Groups	1.900	6	.317	1.989	.068
	Within Groups	39.482	248	.159		
	Total	41.382	254			
Social_norms	Between Groups	.867	6	.144	1.351	.235
	Within Groups	26.519	248	.107		
	Total	27.386	254			
Social_image	Between Groups	.108	6	.018	.216	.972
	Within Groups	20.769	248	.084		
	Total	20.877	254			

*Table 11 One-Way ANOVA health motivation*motives for food choice*

7.4.2. Locus of Control

54.1% of the sample had high internal control. Germans scored significantly higher on this scale ($X^2(3) = 8.439$, p= .038). Results are shown in Figure 8.

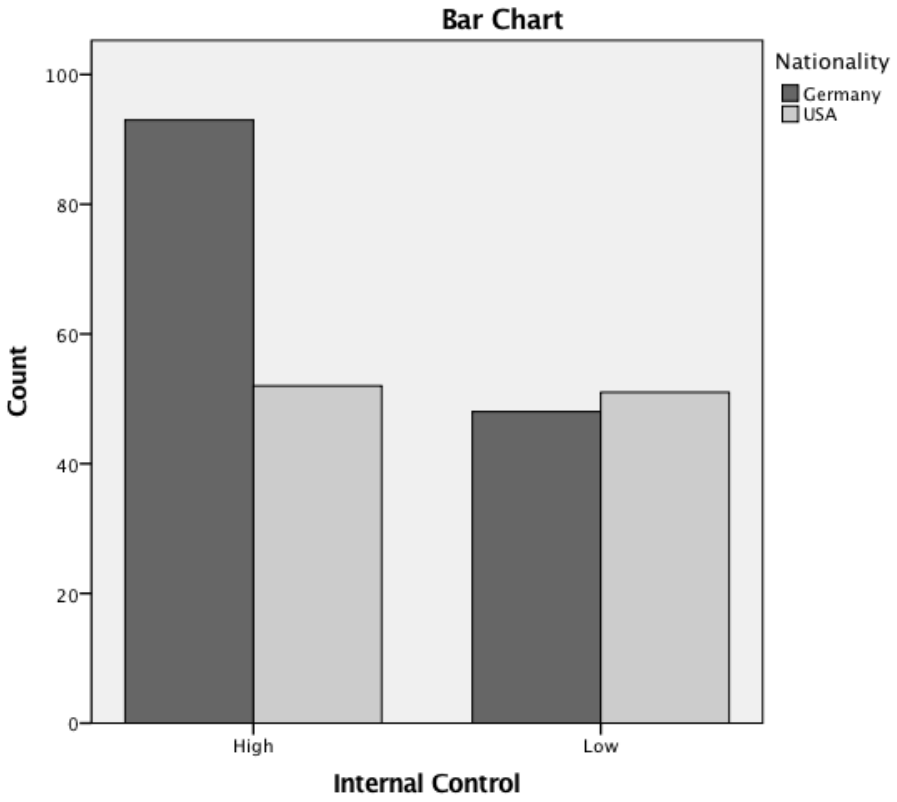

Figure 8 Internal Control by Nationality

No significant differences between the nationalities were identified for powerful others control, however 78.5% of the sample could be assigned to the "high powerful others control" group (Figure 9).

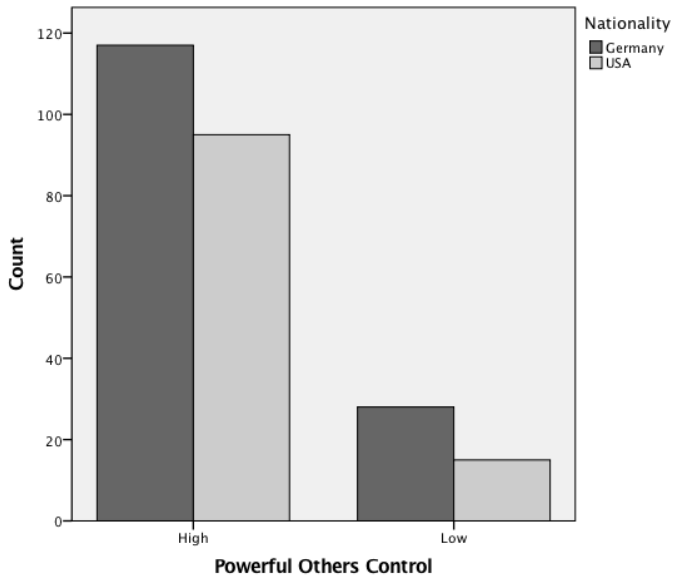

Figure 9 Powerful Others Control by Nationality

An independent samples t-test revealed that there was in fact a correlation between the perceived control of powerful others and motives such as *Price* (p=.028) and *Sociability* (p=.035).

Those who seemed to be more controlled by powerful others, also were more likely to be motivated by the above factors (Table 12).

						95% CI of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Sociability	-2.122	253	.035	-.14623	.06892	-.28197	-.01049
Price	-2.217	253	.028	-.14886	.06716	-.28111	-.01661

*Table 12 Significant results of the independent samples t-test powerful others control*motives for food choice*

There was a correlation between an internal locus of control and the motive of *Pleasure* (p=.034), *Affect Regulation* (p=.005) and *Social Norms* (p= .007) (Table 13).

						95% CI of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pleasure	-2.136	153	.034	-.23517	.11011	-.45271	-.01763
Affect Regulation	-2.837	153	.005	-.33103	.11669	-.56156	-.10051
Social Norms	-2.713	153	.007	-.28563	.10529	-.49365	-.07761

*Table 13 Significant results of the independent samples t-test internal control*motives for food choice*

Those, who scored higher on the internal control scale were less likely to eat for *Pleasure*, *Affect Regulation*, or *Social Norms* when compared to those who scored lower on the internal control scale.

7.4.3. Influence of Important Others

Germans in this sample were significantly less likely to be influenced by others ($X^2(7) = 17.520$, p= .014) than US-Americans (Figure 10).

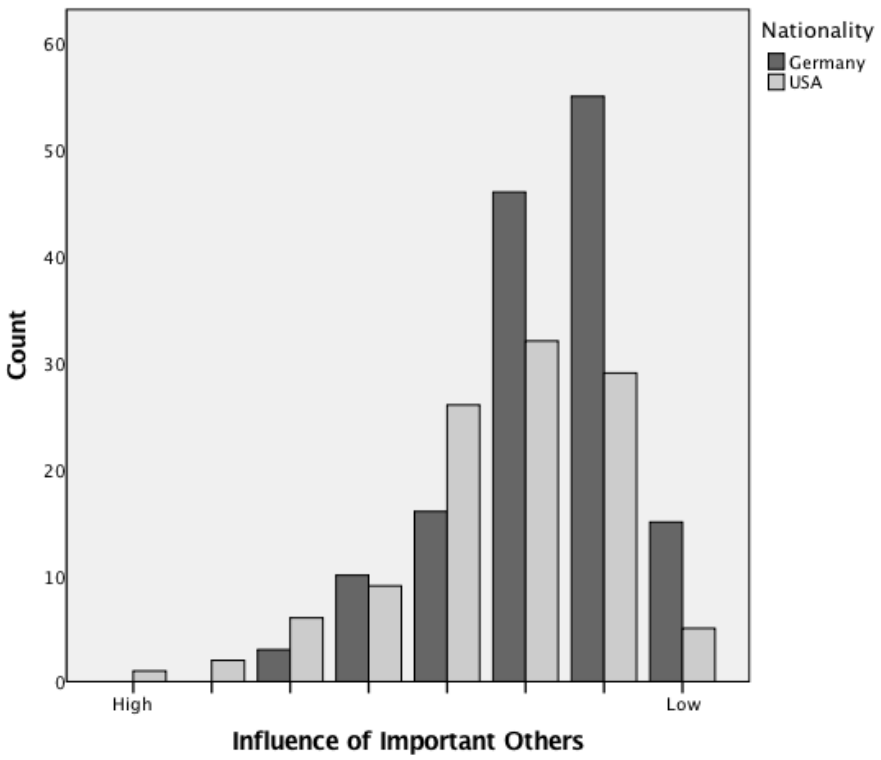

Figure 10 Influence of Important Others by Nationality

A one-way ANOVA revealed that the influence of important others affected the motives of *Price* (p=.029), *Affect*

Regulation (p=.000), *Social Norms* (p=.001) and *Social Image* (p=.005).

Those, who were more likely to be influenced by others, were more likely to be motivated to eat by *Price, Affect Regulation, Social Norms,* and *Social Image* (Table 14).

Price	Between Groups	2.514	7	.359	2.271	.029
	Within Groups	39.067	247	.158		
	Total	41.581	254			
Affect_regulation	Between Groups	5.164	7	.738	5.031	.000
	Within Groups	36.218	247	.147		
	Total	41.382	254			
Social_norms	Between Groups	2.576	7	.368	3.663	.001
	Within Groups	24.810	247	.100		
	Total	27.386	254			
Social_image	Between Groups	1.624	7	.232	2.977	.005
	Within Groups	19.253	247	.078		
	Total	20.877	254			

*Table 14 Significant results of the one-way ANOVA important others*motives for food choice*

7.4.4. Food Frequency Questionnaire

60% of the entire sample did not meet recommendations for fruit intake and 53% did not meet the recommended level of vegetable intake. 83.7% of all participants did not eat enough potatoes rice and pasta products.

While the recommended level for meat was not met only by 7.3% of the sample population, 74.7% had an inappropriate intake of dairy products.

For vegetable and animal fats, recommendations were met by 51.1% and 86.3% respectively.

As for sweets, snack foods and sweetened beverages the recommended levels were not exceeded by the majority of participants with only 7.8% for sweets, 4.1% for snack foods, and 2.6% for sweetened beverages not meeting dietary recommendations.

No significant differences for dietary intake were identified between nationalities.

There were no significant differences between groups in regards to preparing meals at home although US-Americans were more likely to choose “never” than Germans (Figure 11).

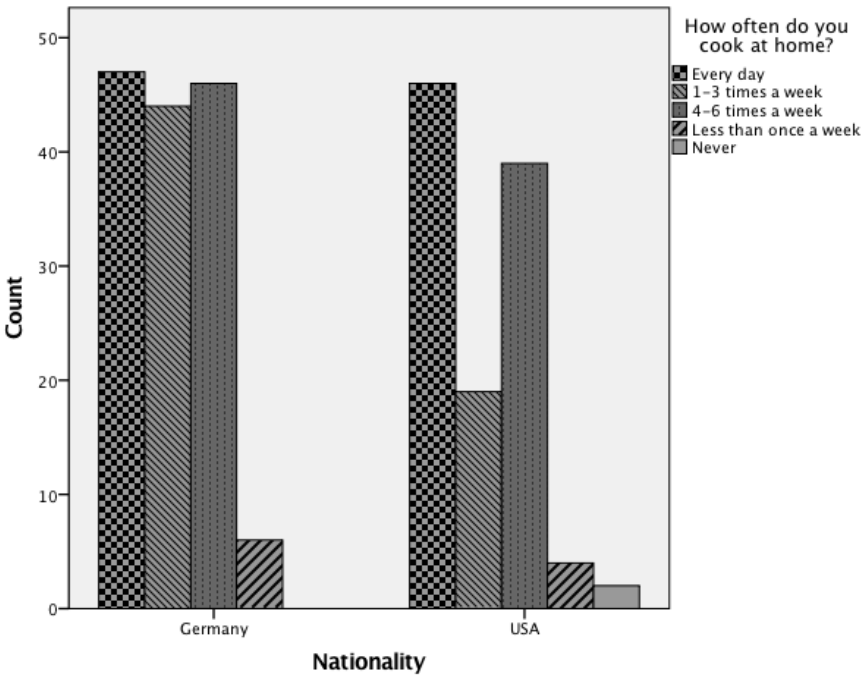

Figure 11 Cooking at Home by Nationality

The Pearson Chi-Square test revealed a significant difference (X^2(1df) = 8.177197, p=0.004) for nutritional supplement intake between the two nationalities. US-Americans were more likely to take a nutritional supplement. 44.5% of the USA sample was taking a supplement, while only 27.3% of the German sample did.

The one-way ANOVA revealed a significant influence of dietary intake on the motives of Need and *Hunger* (p=.002), *Health* (p=.000), *Convenience* (p=.002), *Pleasure* (p=.002), *Natural Concerns* (p=.012), *Sociability* (p=.001), *Visual Appeal* (p=.017), and *Social Image* (p=.002) (Table 15).

		Sum of Squares	df	Mean Square	F	Sig.
Liking	Between Groups	.895	8	.112	.869	.543
	Within Groups	31.408	244	.129		
	Total	32.303	252			
Habits	Between Groups	1.899	8	.237	1.650	.111
	Within Groups	34.946	243	.144		
	Total	36.845	251			
Need_and_hunger	Between Groups	3.053	8	.382	3.155	.002
	Within Groups	29.512	244	.121		
	Total	32.565	252			
Health	Between Groups	9.748	8	1.218	7.613	.000
	Within Groups	39.050	244	.160		
	Total	48.798	252			
Convenience	Between Groups	2.929	8	.366	3.219	.002
	Within Groups	27.753	244	.114		
	Total	30.682	252			
Pleasure	Between Groups	2.796	8	.349	3.255	.002
	Within Groups	26.195	244	.107		
	Total	28.991	252			
Traditional_eating	Between Groups	1.277	8	.160	1.235	.279
	Within Groups	31.544	244	.129		
	Total	32.821	252			
Natural_concerns	Between Groups	4.700	8	.587	2.503	.012
	Within Groups	57.269	244	.235		
	Total	61.969	252			
Sociability	Between Groups	4.422	8	.553	3.440	.001
	Within Groups	39.211	244	.161		
	Total	43.633	252			
Price	Between Groups	1.263	8	.158	.960	.468
	Within Groups	40.124	244	.164		
	Total	41.388	252			
Visual_appeal	Between Groups	2.001	8	.250	2.396	.017
	Within Groups	25.470	244	.104		
	Total	27.471	252			
Weight_control	Between Groups	1.516	8	.190	1.050	.399
	Within Groups	44.043	244	.181		
	Total	45.560	252			
Affect_regulation	Between Groups	1.736	8	.217	1.340	.224
	Within Groups	39.512	244	.162		
	Total	41.247	252			
Social_norms	Between Groups	.330	8	.041	.373	.934
	Within Groups	26.997	244	.111		
	Total	27.327	252			
Social_image	Between Groups	1.949	8	.244	3.202	.002
	Within Groups	18.563	244	.076		
	Total	20.512	252			

*Table 15 One-way ANOVA motivation for food choice*FFQ*

Those who met dietary recommendations were rather motivated by *Need and Hunger, Health*, and *Natural Concerns* than those who did not meet dietary recommendations.

Individuals in the "does not meet recommendations" group were more often motivated by factors like *Convenience, Pleasure, Sociability, Visual Appeal*, and *Social Image*.

7.4.4.1. Special diets

47% (127) of the participants said they were following a special diet.

US-Americans said they were on a special diet slightly more often than Germans (Table 12) although this difference was not significant ($p > .05$).

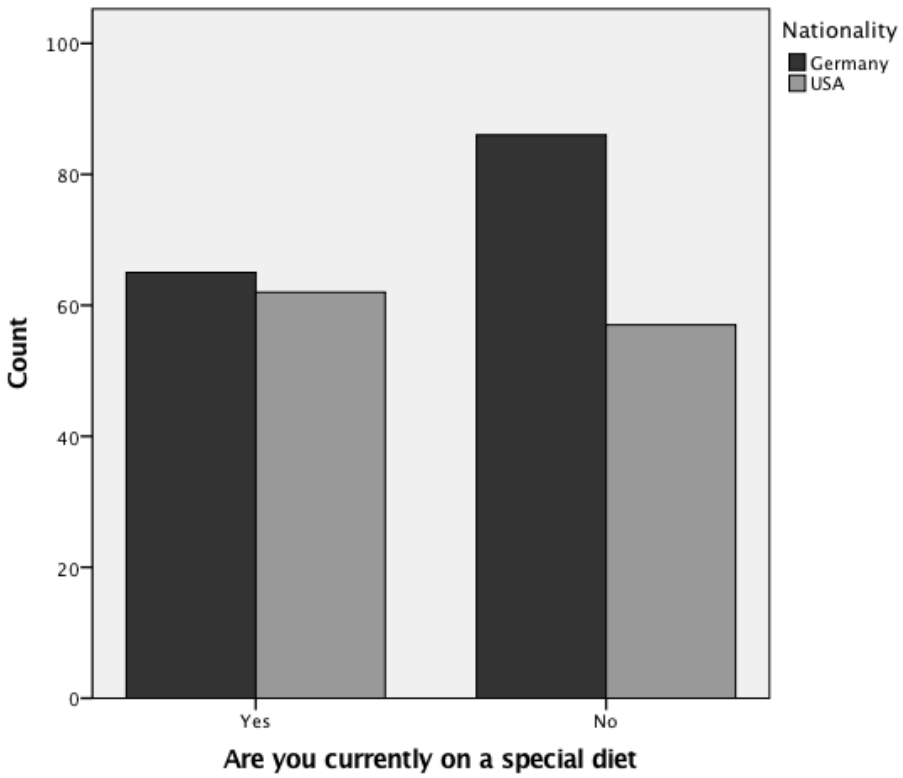

Figure 12 Adherence to special diet by nationality

Within the whole sample, the most prevalent kind of diet, was a vegetarian diet (13%), however this eating pattern was slightly more popular in Germany ($p=.048$) while in the USA a vegan eating pattern was significantly more popular than in Germany ($p=.025$). Veganism together with calorie restriction were the second most popular diets for all

participants (11.9% respectively). The third most popular diet within the whole sample was a low-carbohydrate diet (10.7%). Gluten-free (5.9%), Lactose-free (4.4%), and low-fat (3%) diets were least popular for both samples, with no significant differences between nationalities. The low-fat diet was more popular within the US-American sample. However, this difference did not reach a significant level (p=.074). For more details see Figure 13.

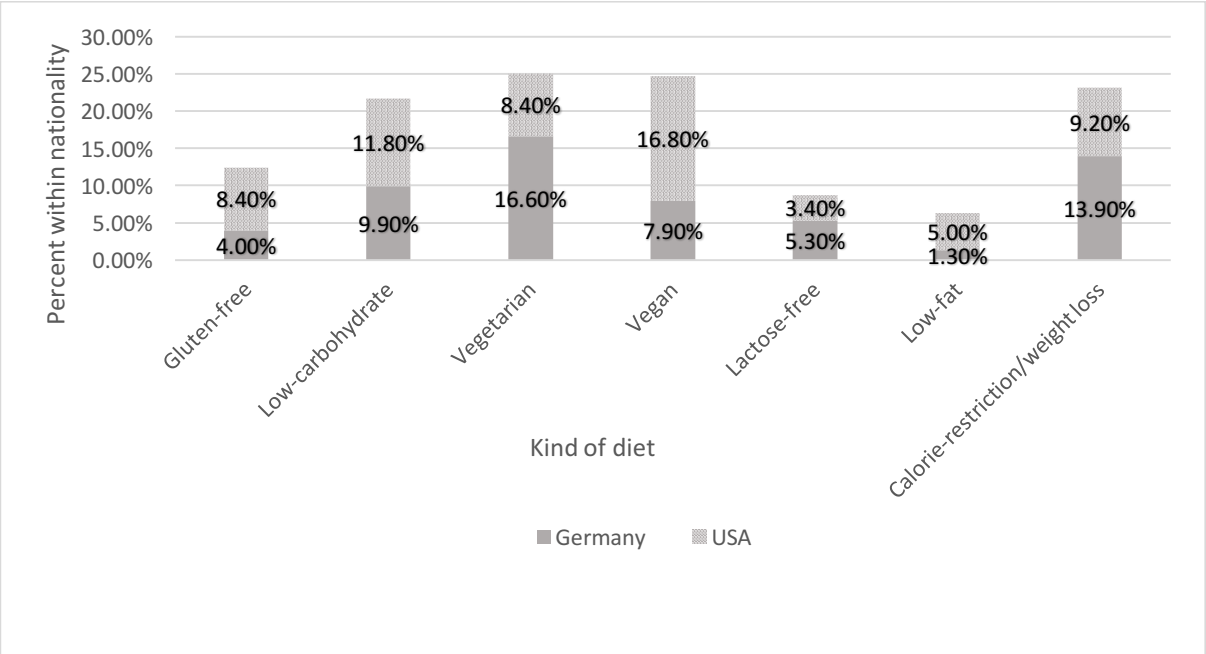

Figure 13 Kind of diet by nationality

The adherence to a special diet influenced the motives of *Habit* (X^2 (12) = 25.997, p= .011), *Health* (X^2(11) = 25.990, p= .007), and *Weight Control* (X^2(10) = 30.228, p=.001).

Those, who said they were on a special diet were more motivated to eat by *Habits* and *Health*.

Those who were less motivated to eat by *Weight Control* reasons, were also less likely to be on a special diet.

7.4.5. Dietary History and Body Satisfaction

45% of the participants said they have tried to lose weight before and 50% still desired to lose weight. US-Americans were slightly more likely to diet; however, the difference did not reach statistical significance (all p >.05).

57.8% of the whole sample said they were happy with their body and 60% said they were happy with their looks. Germans tended to be happier with their appearance but the difference was not significant (all p >.05).

The results of the t-test revealed that those who said they were on a diet at some point in their life, were less motivated by *Liking* (mean difference -.14278 (CI 95% [-.23134; -.05421]), t (228.934)= -3.177, p=.002, d= 0.42), and *Visual Appeal* (mean difference -.08326 (CI 95% [-.16454; -.00198]), t(267)= -2.017, p=.045, d= 0.25) but more motivated by *Weight Control* (mean difference .37320 (CI 95% [.28063; .46578]), t(267)= 7.937, p=.000, d=0.97) and *Affect Regulation* (mean difference .12453 (CI 95% [.01998; .22908]), t(225)= 2.347, p=.020, d= 0.31).

Those who said they wanted to lose weight were less motivated by *Natural Concerns* (mean difference -.22899 (CI 95% [-.34535; -.11263]), t (267) = -3.875, p=.000, d= 0.47) but more motivated by *Weight Control* (mean difference .42222 (CI 95% [.33313; .51131]), t(268)=9.331, p=.000, d= 1.13) and *Affect Regulation* (mean difference .21358 (CI 95% [.11435; .31281]), t(250.432)= 4.239, p=.000, d= 0.54).

Similarly, those who said they were not happy with their body were less motivated by *Natural Concerns* (mean difference .17706 [.05795; .29616], t (267) = 2.927, p=.004, d= 0.36) but more by *Weight Control* (mean difference (-.38549 [-.47837; -.29261], t(268)=-8.172, p=.000, d= 0.99) and *Affect Regulation* (mean difference -.17167 [-.27691; -.06643] t(210.859)= -3.216, p=.002, d= 0.44)

Those who were dissatisfied with their looks, were less motivated to eat by *Liking* (mean difference .11667 [.02819; .20514], t(268)= 2.596, p=.010, d= 0.32) or *Natural Concerns* (mean difference .13675 [.01589; .25761], t(267)= 2.228, p=.027, d= 0.27) but more motivated by *Weight Control* (mean difference -.36975 [-

.46450; -.27501], t(269)= -7.684, p= .000, d= 0.94) and *Affect Regulation* (mean difference -.19496 [-.30099; -.08892], t(199.068)= -3.626, p=.000, d= 0.51).

There was a correlation between BMI and past diet. Subjects in the "obese" category where significantly more likely to have been on a diet at some point in their life ($X^2(3) = 15.473$, p= .001). Both, overweight and obese subjects stated that they want to lose weight more often than normal weight subjects ($X^2(3) = 42.159$, p= .000).

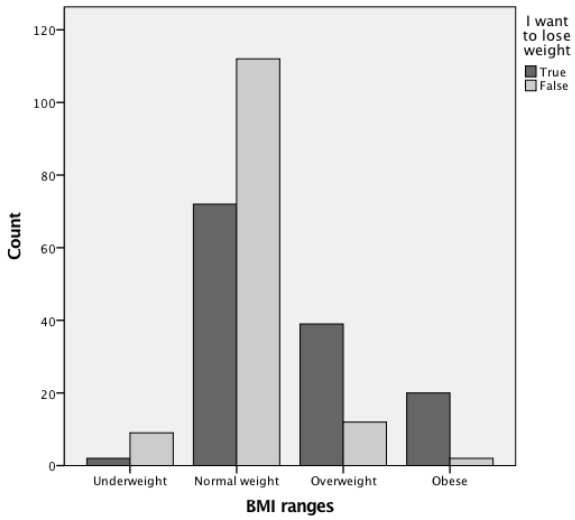

Figure 14 Frequency of want to lose weight by BMI range

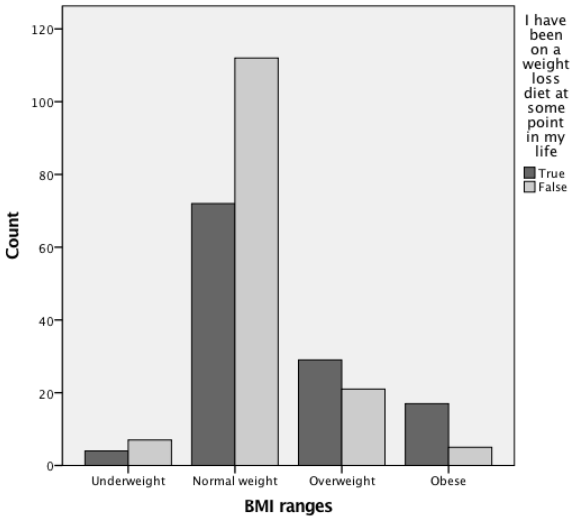

Figure 15 Frequency of past diets by BMI ranges

There was also a correlation between BMI and body satisfaction, with obese subjects being significantly less likely (X^2 (3) = 22.718, p= .000) to be satisfied with their body. However, this correlation was not significant for overweight subjects. The same correlation could be observed for the satisfaction with one's looks. Obese, but not overweight subjects were significantly ($X^2(3) = 21.194$, p= .000) less likely to be happy with the way they look.

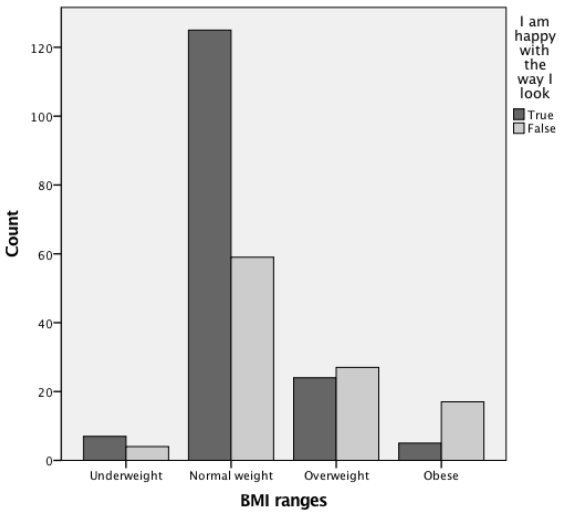

Figure 16 Looks satisfaction by BMI ranges

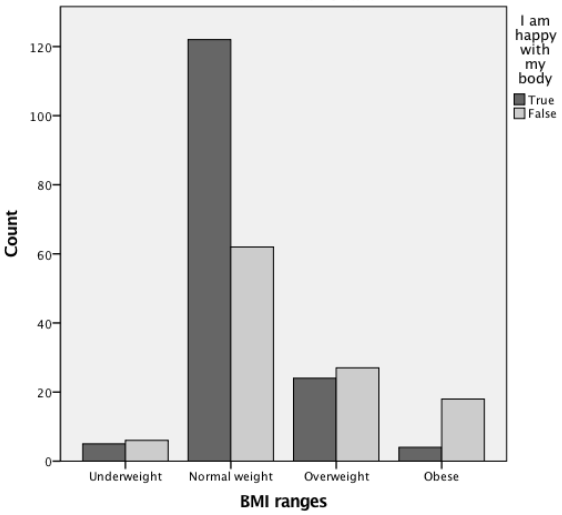

Figure 17 Body satisfaction by BMI range

7.4.6. Source of Health Information

42.9% of the whole sample said their main source of information was the internet. The second most frequent answer was health care professionals (22.8%), followed by print media (12.7%) and friends and family (8.6%). Germans cited print media and health care professionals more often as a source of information than US-Americans.

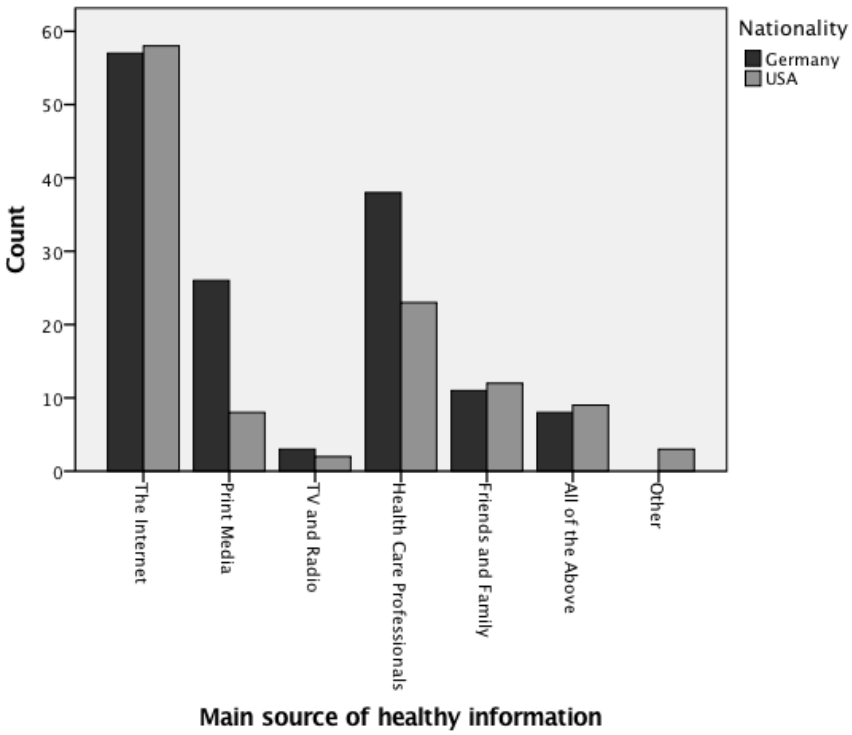

Figure 18 Sources of health information by nationality

The one-way ANOVA revealed that there was no correlation between the source of health information and motives for food choice (all p >.05).

8. Discussion

8.1. Instrument

The TEMS is a comprehensive tool to measure factors influencing the motivation for food choice. The current data is comparable with previous results (Renner, et al., 2012), confirming the reliability of this tool in different samples.

While it is important to consider all factors, such an extensive tool is highly unlikely to be appreciated by most study subjects. The feedback from most participants of the current study was rather unenthusiastic; most stated they were overwhelmed by the amount of questions.

Many of those, who finished the questionnaire only did so out of personal interest. This is a major problem, as those who are interested in the topic of food motives, most likely have a higher level of knowledge related to the area. Those individuals might not accurately represent the public's attitudes. This is supported by the fact that only 23% of the sample were in the less health-conscious group, and 74.7% of the participants displayed a high health motivation.

The questionnaire relies on a subjective self-report which arises the possibility of report bias. This is especially important to keep in mind when evaluating the FFQ (Shim, et al., 2014) but is also true for all other variables.

To simplify the questionnaire, the scale has been shortened from a 7-point to a 3-point scale, however this modification did not reduce the burden on study subjects. This is reflected in a fairly large number of drop-outs (30%).

8.2. Recruitment

The recruitment in Germany was performed partly through the mailing list of the University of Applied Sciences in Hamburg. This resulted in a high number of students in the field of applied science responding to the questionnaire. This group does not represent the general population; it is likely to be more knowledgeable in the field of nutrition and health, hence being more health conscious.

Likewise, the USA sample was recruited with support of the Wellness Forum Health; a health-care institution. Participants reached through this recruitment process are very likely to have a high level of nutrition knowledge, and to be more health-oriented than the general population.

The online-based approach might have resulted in a limited sample, which is reflected in most participants being younger than 35 years and having university degrees.

8.3. Results

The gender distribution was imbalanced, with considerably more female participants. Females make up 53.5% of the German, and 50.4% of the USA population (World Bank, 2016). The current sample consisted of 69.6% female subjects. It has repeatedly been illustrated that women are more concerned with health and nutrition (e.g. Rozin, et al., 1999). Having a personal interest, they are more likely to participate in surveys concerning this topic.

The age of the participants was unevenly distributed with a majority younger than 35 years. However, the median age in Germany is 46 years (CIA, 2016), and in the USA, 38 years (CIA, 2016(1)). This makes the current sample younger than the average person from both countries.

Because the sample consisted of mainly higher educated individuals, it can be supposed that nutrition knowledge was also higher (McSpadden, et al., 2016).

The education level might to some extent explain a normal mean BMI in this sample (McSpadden, et al., 2016). As of 2014, 22% of the German (CIA, 2016), and 35% of the USA (CIA, 2016(1)) population was obese. The current sample is well below these numbers; 4% of the German, and 13.7% of the USA subjects were obese.

Taken together, the current sample does not accurately resemble the general population of either country.

8.3.1. Motives

Previous research has identified the motives of liking, habits, and health as some of the most important causes for food choice (e.g. Steptoe, et al., 1995; Renner, et al., 2012). Findings of the current study confirm that liking was the most important motive. This tendency was observed in both countries; however, Germans were significantly more motivated by taste than US-Americans.

Besides choosing foods that are liked, pure physiological cues will determine food choice; the motive of need and hunger was the second most important factor triggering food choice.

While the motive of health was among the three most important motives triggering food, one needs to remember that the current sample was highly health-conscious, which might have skewed the result. However, it is remarkable, that even among such a health-oriented sample, liking, and hunger were most valued.

It can be supposed, that a less health-conscious sample would have valued the motive of habits more.

Pleasure and convenience also scored fairly high. In accordance to existing data (Renner, et al., 2012), the motives of social image, social norms and affect regulation were least important in the current sample.

When differences between countries are considered, significant variances exist for 6 out of 15 motives.

The soundest difference was seen for social image which was significantly more important in the USA sample. Yet, despite scoring higher it still was the least important motive triggering food choice.

Likewise, Germans scored significantly higher on the liking motive, however, it was still the most important motive for food choice in both countries.

All motives are presented in order of importance, and are compared to existing evidence (Renner, et al., 2012) in Table 16.

	USA	**Germany**	**Renner et al., 2012**
Motives for food choice from most to least important	Liking	Liking	Liking
	Need and Hunger	Need and Hunger	Habits
	Health	Health	Need and Hunger
	Convenience	Habits	Health
	Pleasure	Pleasure	Convenience
	Habits	Convenience	Pleasure
	Price	Traditional Eating	Traditional Eating
	Sociability	Sociability	Natural Concerns
	Traditional Eating	Natural Concerns	Sociability
	Visual Appeal	Price	Price
	Natural Concerns	Visual Appeal	Visual Appeal
	Affect Regulation	Weight Control	Weight Control
	Social Norms	Affect Regulation	Affect Regulation
	Weight Control	Social Norms	Social Norms
	Social Image	Social Image	Social Image

Table 16 Comparison of motives for food choice between USA, Germany, and existing evidence

Clearly, differences exist, however the most and least important motives remain the same. This suggests only modest variances between countries.

The fact that liking was significantly more important among the German sample could imply a less controlled eating behavior as discussed by Rozin et al. (1999) and Hawks et al. (2003).

Statistical significance was reached for convenience, which is reasonably more important for US-Americans. This might be due to the fact, that in the USA, quantity is

more appreciated (Rozin, et al., 2006). In contrast, Germans are more motivated by natural concerns than US-Americans. Germans highly value the quality of food; many are willing to spend more money on food, if standards are high (BMEL, 2017).

Social motives were significantly more important in the USA sample. This difference might be due to US-Americans more likely to attach moral worth to eating and feeling more pressure to eat in a certain way (Rozin, et al., 1999).

The fact that affect regulation seemed more influential on food choice in the USA, can be understood as a high level of emotional eating. This would further confirm findings of research by Hawks and colleagues (2003), who observed a high amount of food-related worry among US-Americans, which resulted in dysfunctional eating behavior (i.e., emotional eating). However, the current data is insufficient to confirm this claim.

Contrary to previous evidence (Rozin, et al., 1999), suggesting that US-Americans are less pleasure-oriented than Europeans, US-Americans valued pleasure just as much as Germans.

Thus, it can be assumed, that despite differences, the main motives underlying food choice are fairly similar, and that the most important factors triggering food choice are liking, need and hunger and health. It should be considered that this sample was highly health conscious, so the motive of health might have scored lower, if the sample was more representative for the general population.

8.3.2. Additional Variables

The variables of health consciousness, locus of control, and influence of important others were only briefly assessed. To fully understand their influence on eating motives, the scales should be used in their full scope rather than as single questions. The results can only be understood as suggestions for possible relations between motivation and behavior. They can be of value for guiding future research questions. The interpretation of the variables will be hypothetic.

Nevertheless, interesting trends were observed that are in accordance to theories and previous research.

Germans scored significantly lower on the health motivation scale. This is in line with existing research, that found US-Americans to be highly health-oriented (Hawks, et al., 2003; Rozin, et al., 1999).

As expected, more health-conscious individuals were more likely to say they are motivated to eat by health outcomes. Additionally, they were more motivated by need and hunger, which might indicate a more flexible eating behavior.

The higher importance of motives such as visual appeal, price, convenience, and sociability among the less health-conscious, in contrast, suggest that they might rather be influenced by external factors. This argument is further supported by the finding, that individuals who felt more controlled by others were also more likely to be motivated by price and sociability.

Germans feel more internal control over their health, and are less likely to regulate emotions with food or choose foods in order to adhere to social norms. Germans in this sample tended to be less influenced by their social environment (i.e., important others). The motives of social norms and image accordingly were less important in the German sample. However, those with higher levels of

internal control were also found to be less pleasure-oriented. This might seem contradictory; however, it implies that internally regulated individuals listen to their natural cues more, and choose foods based on physiological needs rather than externally impelled standards.

This argument is further supported by the finding that those who feel in control of their behavior are more likely to be motivated by health. In the current sample, those who felt less controlled by others, were less likely to engage in emotional eating, or to eat in order to look good in front of others, which is in accordance with theoretical work (e.g. Ryan & Deci, 2000).

The results are comparable to findings of Hawks and colleagues (2003), who found that the highly health oriented US-Americans tended to lose control over eating easier, were more rigidly controlled, yet had a higher BMI.

This study finds that internal control and health consciousness were related to a higher motivation to choose foods based on the motive of health. Suggesting that a high level of autonomy, and knowledge about risks can increase the likelihood of having a healthy eating pattern. This is in accordance to theoretical work (Ryan & Deci, 2000; Champion & Skinner, 2008).

As expected based on existing evidence (Hawks, et al., 2004), there was a correlation between BMI and diet behavior.

Obese subjects were most likely to have been on a diet before, and had the highest amount of dissatisfaction with their appearance.

Both, past and current dieters, scored higher for the motives of weight control and affect regulation compared to those who never tried to control their diet.

While the motive of weight loss is rather obvious, a higher motivation to eat for affect regulation confirms previous findings of a dysfunctional relationship with food among past and current dieters (e.g. Leng, et al., 2016; Ceccarini, et al., 2015).

The fact that most of the obese and overweight subjects said they have been on a weight loss diet before, might indicate a relation between controlled eating and weight gain as proposed by Leng and colleagues (2016). An alternative explanation could be, that obese adults were obese children (WHO, 2016), and had to control their diets since an early age. However, if that is the case, the past attempts to regulate weight had little effect as individuals remained overweight or obese. This would confirm a lack of effectiveness of current dietary approaches (Ceccarini, et al., 2015).

Those, who had a normal weight rarely said they tried to lose weight before, suggesting that their normal weight was a result of a natural eating behavior.

The results can suggest that individuals who have a less controlled eating behavior are more likely to have a normal weight, which would confirm previous findings (e.g. Westenhöfer, et al., 2003).

As discussed before, a positive body image can result in healthier dietary behaviors (Teixeira, et al., 2015). In this study, subjects who were dissatisfied with their appearance were more likely to engage in emotional eating. Those with higher body dissatisfaction also were less likely to consume foods based on taste. This could be interpreted as a more controlled eating behavior, but future research is needed to confirm this statement.

Despite the mean BMI of this sample being in the normal range, most did not meet recommended levels of fruit, vegetable, grain, and dairy intake. This is noteworthy

because the largest part of the current sample was health conscious and had a high level of health motivation.

Several explanations are possible. For one, it is possible that health motivation is not mirrored in behavior. This was however examined, and could not be confirmed. Thus, it could be supposed that there is uncertainty among the public, as to what healthy nutrition is. The high level of consumer confusion regarding healthy nutrition is a big challenge for health professionals (Academy of Nutrition and Dietetics, 2013). Media can support the promotion of healthy behaviors, however they often communicate mixed messages that result in a feeling of helplessness among the public (Academy of Nutrition and Dietetics, 2013). Health-driven individuals might pick the messages that compell with personal beliefs most, without consideration of official recommendations.

This is, to some extent mirrored in the fact, that those who said they follow a special diet were more motivated by health reasons.

The fact that a large part of this sample did not exceed the recommended level for sweets, snack foods, and sweetened beverages once more highlights the sample's high health orientation. Consumption of such foods is generally higher in both countries (Steele, et al., 2017; Slimani, et al., 2009).

When food motives are considered, the quality of diet influenced 8 out of 15 possible motives. Individuals who met dietary recommendations, were more motivated by health reasons and by physiological factors like need and hunger. This suggest that, in the current sample, health motivation was translated into behavior (i.e., intake).

Interestingly, the healthier eaters were more motivated by the motive of natural concerns, which is most likely due to them choosing more organic foods, and being more conscious about agricultural practices.

While no differences could be observed for dietary intake, US-Americans consumed significantly more nutritional supplements. This might be due to their high level of health-orientation, or a need to compel with standards set by marketers (Academy of Nutrition and Dietetics, 2013). It could indicate that US-Americans prefer easy solutions over apparently complicated lifestyle changes.

Individuals who tried to lose weight, were more likely to be following a special diet. This comes to no surprise, as usually the adherence to a particular diet is needed for weight loss.

Paradoxically, those who said they were motivated to eat by habit, also said they were following a special diet more often. No explanation for this relation can be made based on current data. It could be of value to further investigate this question in the future.

No significant differences were observed between nationalities for adherence to a special diet overall, however when the specific kind of diets are looked at, significant differences were identified for vegan and vegetarian diets.

US-Americans more often said they were vegan, while Germans were more likely to be vegetarian. This might have numerous reasons, however, one needs to keep in mind that the USA sample was recruited with the support of the Wellness Forum Health, which promotes a mostly plant-based eating pattern. Thus, this difference might be heavily biased and no further conclusions will be made.
Nevertheless, it can be concluded that a vegetarian eating pattern is popular among Germans. Vegetarian and vegan diets are often motivated by environmental reasons (Hoffman, et al., 2013). Germans are highly concerned with livestock farming and agricultural practices (BMEL, 2017). Correspondingly, natural concerns seemed an important motive within the German sample.

Interestingly, the source of health information had no influence on the motives for food choice. This finding is not in agreement with previous research. Most participants stated they acquired health information through the internet. As an active information channel, it was expected to have an influence on health motives (Dutta-Bergman, 2004). However, the various communication channels had no effect on motives. This result is likely to be due to the limited design of the current questionnaire, and can be investigated further with suitable methods.

8.4. Motivational Concepts and Health Prevention

Interventions aimed to alter eating habits should be based on theories as discussed before. Evidence exists, that strategies combining multiple theories, rather than those focusing only on one theory are more effective in changing behavior (Bishop & Glanz, 2010).

Furthermore, changing one's behavior for health, or weight loss reasons is usually not perceived as interesting or enjoyable. Nutritional interventions are usually seen as a technical and brief measure to achieve a short-term goal (e.g. quick weight-loss), that will most likely not be maintained after initial success, or given up upon quickly when faced with challenges (Teixeira, et al., 2011).

In line with previous research (e.g. Steptoe, et al., 1995; Teixeira, et al., 2011; Leng, et al., 2016), the findings of the current study reveal, that despite the motive of health scoring fairly high, it was not the most important motive for food choice. People are more likely to choose foods based on taste, habits and physiological needs (i.e., hunger). This is especially true for the less health conscious individuals. Thus, interventions aimed to increase healthy eating within populations need to tackle all motives underlying food choice. Those, who do not attach value to healthy eating, will not pay attention to monotonous messages of health, as they do not perceive them personally relevant (Academy

of Nutrition and Dietetics, 2013). What is more, they might perceive them as pressuring, which will result in discouragement (Ryan & Deci, 2000).

To reach a wide audience, nutrition information should be presented in a context that is relatable and easy to understand for all individuals (Academy of Nutrition and Dietetics, 2013). As those, who are less health conscious are more likely to be motivated by price and convenience, it is probable that even with knowledge of risks, the perceived costs will outweigh the benefits of a dietary change (Champion & Skinner, 2008). Additionally, providing information might only influence behavior, if motivation is already present. It cannot induce motivation, since the personal importance is not acknowledged (Ryan & Deci, 2000(1)). Many individuals, who would benefit from a dietary shift, are likely to be in the precontemplation, or contemplations stage of behavior change. A combination of information about the diet-disease link, rising consciousness about dietary behavior, and a highly supportive environment might prompt action (Prochaska & Velicer, 1997).

Physical environments play an important role in food choices (Brug, 2008). Lower prices of healthy foods are usually associated with a greater intake (Powell, et al., 2013), especially if combined with consumer educational approaches, such as leaflets and in-store posters. A recent study found that a 20% price reduction, in combination with providing information had a significant impact on fruit and vegetable consumption (Brimblecombe, et al., 2017). Discounts are a good approach to modify the dietary intake. They make healthy choices accessible, especially in less health-conscious individuals, for whom economic motives are important.

Eating is a combination of social influences, and personal beliefs, thus providing information alone might be of little use among less health-oriented groups (Academy of

Nutrition and Dietetics, 2013). Many individuals persist in old habits because negative consequences are not immediate, and seem outside their control (Academy of Nutrition and Dietetics, 2013). What is more, individuals often persist in old behaviors out of habit, despite undesirable results (Leng, et al., 2016).

A more suitable way of inducing motivation for a shift in dietary behavior, would be communicating positive health messages, that focus on benefits of a balanced diet. Most consumers prefer to hear what foods are beneficial rather than being told which ones to avoid (Matjasko, et al., 2016). A positively framed health message would increase feelings of enjoyment, competence, and autonomy.

Health messages need to be communicated to the public in an understandable and clear way. Current practices result in high levels of confusion; distinguishing advertisements from health messages requires plenty of critical thinking skills, health-knowledge, and media literacy. The marketing of “special” foods that are required for a healthy diet increases feelings of uncertainty as to what really is healthy. In addition, it makes a balanced diet seem inaccessible and difficult (Academy of Nutrition and Dietetics, 2013).

There is general agreement that promoting an overall healthy eating pattern, rather than promoting particular food groups will be of most benefit (USDA, 2015). A global approach to healthy eating allows for a flexible and individual diet, and only provides a guide for dietary intake. No foods are particularly bad or good; this results in less feelings of guilt and pressure but more enjoyment and independence (Academy of Nutrition and Dietetics, 2013).

Further, it is important to avoid messages that focus on superficial and tangible rewards (e.g. weight loss). Such external motives are unlikely to induce a lasting change, and will most likely result in higher levels of anxiety related

to the behavior (Ryan & Deci, 2000). Because a positive body image is connected to a more desirable eating behavior (Teixeira, et al., 2011), health messages should focus on increasing body satisfaction and individual's beliefs about their own abilities.

This study confirms to some extent, that those who have higher levels of internal control, are more internally motivated. Thus, communicating to the public, that health can be influenced through proactive behaviors, rather than inducing feelings of helplessness against external factors (i.e., genes) might have positive outcomes. Empowering messages, and practices that are possible to incorporate into everyday life, have the highest potential to increase healthy behaviors (Academy of Nutrition and Dietetics, 2013).

Health promotion within the population can be implemented through policies. However, policy makers need to consider the population's acceptability of health-promoting interventions (Stok, et al., 2016). According to theoretical work, restrictive interventions such as taxations and bans of unhealthy foods, are considerably unpopular among consumers (Stok, et al., 2016), and can be perceived as controlling.

Understanding consumer behavior has had growing importance in policy making in the past years (Matjasko, et al., 2016). Both, the USA and Germany have introduced the concept of "nudging" into health policy. The goal is to use behavioral techniques to direct individuals (i.e., nudge) towards a healthier behavior without applying rigorous policies such as bans (Lourenço, et al., 2016). Consumers are guided towards healthier choices through subtle manipulations in their physical environment. This includes the placement of products or making the healthier option the standard choice (Matjasko, et al., 2016; Lourenço, et al., 2016).

Nudges can be cues to action; by directing consumers towards healthier choices, without forbiding or restricting them in their choices, individuals feel more in-control over their own behavior. This could potentially induce feelings of autonomy and self-determination, while empowering healthy choices at low costs.

Generally, nudge-based interventions could have positive health outcomes, however they are a fairly new concept and need further evaluation (Matjasko, et al., 2016).

8.5. Limitations

This study had several limitations. First, it was online-based and relies on a subjective self-report of the study subjects. This might have caused some report bias.

By recruiting the participants through an online-based tool, the risk of reaching mostly young individuals is higher. As it is often the case, more young females with a BMI in the normal range, responded to the questionnaire. The sample consisted of mostly health-conscious individuals, this does not mirror the attitudes in the general population.

The current sample is not entirely representative. The distribution of gender, age, education, and weight is not heterogeneous. Additionally, it is fairly small and nationalities are not represented equally, with more participants from Germany than the USA.

Recruitment was done through institutions that were likely to reach more health-oriented and highly educated individuals.

In order to reduce the burden on study subjects, the TEMS was modified into a 3-point scale instead of a 7-point scale which might have changed the outcome.

The current study focused mainly on determining differences in motivation for food choice between two countries. The additional variables were assessed very briefly, which makes any definite conclusions impossible.

The results can be understood as an indication for further research.

8.6. Strengths

The current study is, to my knowledge, the first attempt to compare eating motives in Germany and the USA. The results of this work can guide future research into identifying food motives and their influences on eating behavior.

Such a comparison has the potential to identify cultural differences in food motives. Through understanding why people eat what they eat, and how this influences their diets, better interventions to prevent inappropriate behaviors can be planned. Through successful prevention of further raises in weight gain, consequences of obesity can be prevented or minimalized.

The shift of diets in developing countries is likely to change eating behavior, which will lead to growing obesity rates (FAO, 2017). Understanding how developed nations regulate their behavior can be of high value to prevent dysfunctional eating before the problem becomes rampant.

Novel insights into behavior-oriented policy making, such as an approach that increases positive feelings towards health behaviors, and strengthening proactive behaviors by enabling individuals towards better choices, without inducing external pressure, were discussed.

8.7. Recommendations for Future Research

Some questions arise from the current data. First, an in-depth investigation of relations between food motives and eating behavior would be of great value. The current data indicates that there might be significant correlations between motivation and dietary behavior, perceived control, and health consciousness.

This can be done by fully assessing eating behavior and food motives with two complete, validated scales. A design

that allows to make clear conclusions about the influence of motivation on eating behavior could give more insights into prevention possibilities.

Furthermore, recruiting participants in a different setting and performing the interviews face-to-face might yield better results. A combination of methods might be most effective to reach a diverse sample; younger individuals are likely to prefer different approaches than older individuals. It is also highly recommended to make an effort to reach more males. The results might have been substantially different if more males had completed the questionnaire; females are generally more health conscious.

9. Conclusion

Obesity is a growing global problem (Forouzanfar, et al., 2016), and prevention has been a challenging task for health professionals, and policy-makers alike. Current practices are highly ineffective, and might in fact produce adverse outcomes (Leng, et al., 2016).

Humans learn to like foods early in life through simple conditioning (Brug, 2008). Habits acquired in childhood might be highly resistant to change later in life (van't Riet, et al., 2011). Motivation plays an important role in regulating human behaviors. Humans have the need to fulfill various needs, based on individual factors (Maslow, 1943). Understanding motivation behind food choices might be a critical issue in the skilled design of suitable health-promoting measures (Bishop & Glanz, 2010). Many concepts exist, that aim to instruct behavior change based on motivation.

The self-determination theory stresses the importance of internal motivation, which is induced, if behaviors are valued by the individual. Those who feel more in-control over their behavior, accepted by important others, and competent will find pleasure in behaviors. Autonomy is critical for self-determined behaviors (Ryan & Deci, 2000; Ryan & Deci, 2000(1)).

The social-cognitive theory emphasizes the importance of social environments, that influence how behaviors are evaluated. Through self-regulation, reinforcement and feelings of self-efficacy, high levels of motivation can be achieved (Bandura, 1991).

Within the health-belief model action is taken, if individuals believe that they are at risk, that the benefits will outweigh the costs, and that they have the ability to implement behavioral changes (Champion & Skinner, 2008).

The theory of planned behavior postulates that a behavior can be changed through perceived behavioral control and clear behavioral intentions (Ajzen, 1991).

The transtheoretical model represents six stages of change, that individuals go through. Termination, is the last stage and represents long-term behavior maintenance. To support individuals through the process of change measures like awareness raising, supportive environments, or re-lapse prevention can be implemented (Prochaska & Velicer, 1997).

The evidence for the effectiveness of applying theoretical frameworks to health promotion is continually growing (e.g. Teixeira, et al, 2011; Bishop & Glanz, 2010).

A comparison of motives between two countries can give novel insights into understanding food motivation in relation to culture and environments. In the USA, food motives have been widely studied and some county comparisons exist.

Evidence comparing the USA to Europe or Japan suggests, that differences in food motives between cultures exist. US-Americans might exhibit a more controlled eating pattern, and lose their internal pleasure related to eating. Because of a highly externally regulated eating behavior, they develop an unhealthy relationship with food, and fail to listen to internal cues. This results in weight gain and body dissatisfaction (Rozin, et al, 1999 & 2006; Hawks, et al., 2003).

This study used *The Eating Motivation Scale* (Renner, et al., 2012) to explore differences in food attitudes between Germany and the USA.

It was found that the most important motives for food choice overall are *Liking*, *Need and Hunger*, and *Health*. US-Americans are less likely to eat foods out of enjoyment, but more likely to choose readily available foods. Germans

seem to value quality more. US-Americans tend to eat more for social acceptance, they are easier influenced by their social environment and exhibit less internal control. They also tend to regulate emotions through foods more than Germans.

Additional behavioral factors were assessed to explore possible relationships between motivation and behavior. Findings suggest that US-Americans are more likely to be obese despite being highly health-oriented. They also tend to take more nutritional supplements but conversely do not meet recommended levels for fruit and vegetable intake.

Within both nationalities, individuals, that were unhappy with their body and tried to regulate their diet for weight loss reasons were found to be more likely to engage in emotional eating, and less likely to choose foods they like.

Results are somewhat in agreement with existing data and suggest that a shift away from weight-related messages of guilt and pressure is needed in health communication (Hawks, et al., 2004). Further, clear messages should be communicated to avoid confusion among consumers (Academy of Nutrition and Dietetics, 2013), as even the health conscious individuals in this sample, often failed to meet dietary recommendations.

Evidence from this study supports the use of theoretical models to strengthen motivation for health behaviors. Although highly comparable, some differences between the countries are observed, suggesting that slightly different approaches could be used to promote healthy diets.

German consumers are likely to seek more information about the foods they are consuming, and to be concerned with the quality standards, hence educational campaigns are more likely to have an impact. US-Americans, who seem more concerned with goods to be easily accessible, in terms of both; preparation and price, could benefit from

measures like price discounts, and making the healthy choice the most convenient. US-Americans seem to be more health-conscious but do not have healthier diets than Germans. What is more, they are more likely to be obese. Thus, the excessive focus on health might be understood as a barrier to flexible eating, and a healthy dietary pattern. As US-Americans seem to feel more pressured by their social environment, societal approaches would have more impact on the US-American consumer.

Generally, a shift from a "*good versus bad foods*" approach, and towards promotion of wholesome diets, that incorporate all food groups and encourage flexible eating, would benefit all consumers (Academy of Nutrition and Dietetics, 2013).

Reducing the cost of foods (Brimblecombe, et al., 2017) and limiting the promotion of "special foods" that are needed for health outcomes might empower consumers to adapt a healthy diet (Academy of Nutrition and Dietetics, 2013). Less health conscious consumers are unlikely to be reached through classical health education, thus policy measures, aimed to "nudge" them towards healthier choices could be of use (Lourenço, et al., 2016).

Messages that induce feelings of ability and positive emotions should be communicated. The communication of forbidding and risk-oriented messages is likely to produce high levels of stress related to eating, and adverse results.

Healthy eating patterns will be maintained, if they are internally motivated. Thus, health promotion and obesity prevention should focus on making healthy choices appealing, personally relevant, and accessible. Environments should be designed in a health-oriented manner. The healthy choice should become the standard, and the easiest, tastiest, most convenient option, so that it can be chosen without much forethought. Focus should not be on weight but on wellness and vitality. Based on the

current data, it is concluded that such an approach is likely to produce best outcomes overall.

Future research should further examine the influence of motivation on eating behavior.

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Declaration of Authorship

I hereby certify that this thesis has been composed by me and is based on my own work, unless stated otherwise. No other person's work has been used without due acknowledgement in this thesis. All references and verbatim extracts have been quoted, and all sources of information, including graphs and data sets, have been specifically acknowledged.

Date: Signature:

Attachments

It is important to me that the food I eat on a typical day:

Factor 1—Health
22. Contains a lot of vitamins and minerals
29. Keeps me healthy
10. Is nutritious
27. Is high in protein
30. Is good for my skin/teeth/hair/nails etc
9. Is high in fibre and roughage

Factor 2—Mood
16. Helps me cope with stress
34. Helps me to cope with life
26. Helps me relax
24. Keeps me awake/alert
13. Cheers me up
31. Makes me feel good

Factor 3—Convenience
1. Is easy to prepare
15. Can be cooked very simply
28. Takes no time to prepare
35. Can be bought in shops close to where I live or work
11. Is easily available in shops and supermarkets

Factor 4—Sensory Appeal
14. Smells nice
25. Looks nice
18. Has a pleasant texture
4. Tastes good

Factor 5—Natural Content
2. Contains no additives
5. Contains natural ingredients
23. Contains no artificial ingredients

Factor 6—Price
6. Is not expensive
36. Is cheap
12. Is good value for money

Factor 7—Weight Control
3. Is low in calories
17. Helps me control my weight
7. Is low in fat

Factor 8—Familiarity
33. Is what I usually eat
8. Is familiar
21. Is like the food I ate when I was a child

Factor 9—Ethical Concern
20. Comes from countries I approve of politically
32. Has the country of origin clearly marked
19. Is packaged in an environmentally friendly way

Attachment 1 Food Frequency Questionnaire Factors

I eat what I eat, …

Liking
… because I think it is delicious
… **because I have an appetite for it**
… **because it tastes good**
… because I feel like eating it
… **because I like it**

Habits
… because I eat it regularly
… **because I am accustomed to eating it**
… **because I usually eat it**
… because it is a set part of my diet
… because it is part of my daily diet
… **because I am familiar with it**

Need & Hunger
… **because I need energy**
… **because it is pleasantly filling**
… because it is easy to digest
… **because I'm hungry**

Health
… **to maintain a balanced diet**
… **because it is healthy**
… **because it keeps me in shape (e.g. energetic, motivated)**
… in order to fulfill my need for nutrients, vitamins, and minerals
… because it agrees with me

Convenience
… **because it is quick to prepare**
… **because it is the most convenient**
… **because it is easy to prepare**
… because it is easy and convenient to purchase
… because it is readily available (e.g. at hand or being offered by someone)

Pleasure
… **because I enjoy it**
… **in order to indulge myself**
… because it puts me in a good mood
… **in order to reward myself**
… because it is fun to eat

Traditional Eating
… **because it belongs to certain situations**
… **out of traditions (e.g. family traditions, special occasions)**
… **because I grew up with it**
… because it fits the season

Natural Concerns
… **because it is natural (e.g. not genetically modified)**
… **because it contains no harmful substances (e.g. pesticides, pollutants, antibiotics)**
… **because it is organic**
… because it is fair trade
… because it is environmentally friendly (e.g. production, packaging, transport)

Sociability
… **because it is social**
… **so that I can spend time with other people**
… **because it makes social gatherings more comfortable**
… because it is pleasant to eat with others
… because it makes a social gathering more enjoyable
… because it facilitates contact with others (e.g. at business meals, events)

Price
… **because it is inexpensive**
… **because I don't want to spend any more money**
… **because it is on sale**
… because it is good value for money
… because it is free
… because I have already paid for it

Visual Appeal
… **because the presentation is appealing (e.g. packaging)**
… **because it spontaneously appeals to me (e.g. situated at eye level, appealing colors)**
… because it is nicely presented
… because it looks appealing
… **because I recognize it from advertisements or have seen it on TV**

I eat what I eat, . . .

Weight Control
. . . because I want to lose weight
. . . **because it is low in calories**
. . . because I am overweight
. . . **because I watch my weight**
. . . **because it is low in fat**

Affect Regulation
. . . **because I am sad**
. . . **because I am frustrated**
. . . **because I feel lonely**
. . . as a distraction
. . . because I feel stressed
. . . because it cheers me up

Social Norms
. . . **because it would be impolite not to eat it**
. . . **to avoid disappointing someone who is trying to make me happy**
. . . **because I am supposed to eat it**
. . . because other people (my colleagues, friends, family) eat it
. . . because my family/partner thinks that it is good for me
. . . because my doctor says I should eat it

Social Image
. . . **because it is trendy**
. . . **because it makes me look good in front of others**
. . . **because others like it**
. . . to stand out from the crowd
. . . because it is considered to be special

Attachment 2 The Eating Motivation Scale Factors

Hochschule für Angewandte Wissenschaften Hamburg
Hamburg University of Applied Sciences

CCG
Ethikkommission

HAW Hamburg • CCG • Alexanderstraße 1 • D-20099 Hamburg

Frau
Paula Szwedowski

18.3.2017

Ihr Antrag auf Stellungnahme zum Projekt

A comparison of food motivation in Germany and the United States

Sehr geehrte Frau Szwedowski,

Das o.g. Projekt wurde von der Ethikkommission des Competence Center Gesundheit CCG begutachtet.

Das Vorhaben wird als „ethisch unbedenklich" bewertet. Das Projekt kann, wie derzeit geplant, durchgeführt werden.

Im Fall unvorhergesehener unerwünschter Ereignisse bittet die Kommission um unverzügliche Benachrichtigung.

Im Falle einer Veröffentlichung bittet die Ethikkommission, eine elektronische Kopie der Publikation unaufgefordert einzureichen (Gilt nicht für Abschluss- und Qualifikationsarbeiten).

Wir wünschen für das geplante Projekt viel Erfolg.

Mit freundlichen Grüßen

(Prof. Dr. Jürgen Lorenz)

Attachment 3 Ethics Approval

Antrag auf Stellungnahme der Ethikkommission des Competence Centers Gesundheit
Bitte reichen Sie den Antrag nach Möglichkeit mit allen Anlagen als ein PDF-Dokument

1 AntragstellerIn

1	Name der Antragstellerin/ des Antragstellers	Paula Szwedowski
	Fakultät/Department	Life Sciences/Ökotrophologie
	Adresse	Hubertusstr. 13
		12163 Berlin
	Position	Studentin
	Email	p.szwedowski@me.com

2 BetreuerIn

2	Bei Qualilfikationsarbeiten (Promotion, Masterthesis, Bachelorthesis): Namen der betreuenden Professorinnen und/oder Professoren	Sybille Adam Joachim Westenhöfer
	Fakultät/Department	Life Sciences/Ökotrophologie
	Adresse	Ulmenliet 20
		21033 Hamburg
	Position	Professor
	Email	sibylle.adam(@)haw-hamburg.de joachim(@)westenhoefer.de

3 Kurztitel

3	*Kurztitel des Forschungsvorhabens* A comparison of food motivations in Germany and the United States.

4 Titel

4	*Titel des Forschungsvorhabens* A comparison of food motivations in Germany and the United States.

5 Datum

5	*Datum des Antrags* 16.01.2017

6 Ziel

6	*Welches Ziel verfolgt das Forschungsvorhaben?* Erhebung von Motivationen zum Ernährungsverhalten sowie ein Vergleich zwischen Deutschland und den Vereinigten Staaten von Amerika. Diskussion von Präventionsstrategien.

7 Art der Forschung

7	*Handelt es sich um*	
	Primärforschung	x
	Sekundärforschung	☐
	Handelt es sich um eine Promotion?	☐Ja xNein
	Anderes (bitte erläutern)	☐ Bachelorarbeit

8	*Wurde die geplante Studie bereits bei einer anderen Ethikkommission eingereicht?* ☐Ja xNein Wenn ja, wo? _____ *Wurde die Studie von o.g. Kommission befürwortet?* ☐Ja ☐Nein Ggf. Kommentar: _____

9 Relevanz

9	*Wie ist die Untersuchung wissenschaftlich gerechtfertigt? (theoretischer Rahmen, Relevanz des Forschungsvorhabens)* Übergewicht ist ein wachsendes Problem in westlichen Ländern. Die globale Prävalenz dieser Krankheit steigt, trotz dem Bestehen einer Vielzahl an präventiven Maßnahmen, immer mehr an. Weltweit sind ca. 39% der Population übergewichtig und 13% adipös. Darüber hinaus, steigt auch die Zahl der übergewichtigen Kinder immer weiter an. (WHO, 2016). Wissenschaftliche Studien belegen, dass Übergewicht zu Krankheiten wie Herz-Kreislauf-Erkrankungen, Diabetes Mellitus Typ II oder Muskel-Skelett-Erkrankungen führen kann. Durch einen erhöhten BMI steigt auch das Risiko an Krebs zu erkranken (Stewart & Wild, 2014) (WHO, 2016). Betroffene Personen haben eine eingeschränkte Lebensqualität und die Behandlung der Folgekrankheiten von Übergewicht zieht finanzielle Konsequenzen mit sich (WHO, 2016). Übergewicht kann durch eine gesunde Ernährung und einen aktiven Lebensstil vorgebeugt werden. Viele vorbeugende Maßnahmen, darunter auch neuartige Konzepte, werden bereits eingesetzt. Trotz diesen Maßnahmen steigt die Prävalenz von Übergewicht weltweit (WHO, 2016). Die Gründe dafür sind vielfältig. Beispielsweise werden präventive Maßnahmen von den Betroffenen oft nicht akzeptiert oder als in die Privatsphäre eingreifend gesehen. Eine Studie zeigte, dass die Öffentlichkeit restriktive Maßnahmen nur ungerne akzeptiert (Stock et al., 2016). Darüber hinaus, sind auch die Gründe für Übergewicht vielfältig und können individuell variieren. Soziale und psychologische Faktoren haben einen großen Einfluss auf die Entwicklung von Adipositas (Simpson et. al, 2015). Die Entscheidung etwas zu essen wird zum einen durch physiologische Bedürfnisse wie Hunger, Appetit und Sättigung motiviert. Andererseits beeinflussen u.a. Motive wie Gewichtskontrolle, Preis, Einfachheit, Stimmung, Zugänglichkeit, Einfluss der Werbung, soziale Normen oder Traditionen das Ernährungsverhalten (Steptoe et al., 1995) (Renner et al., 2012). Des Weiteren gibt es Unterschiede in Abhängigkeit von Geschlecht, Alter oder kulturellem Hintergrund (Steptoe et al., 1995). Diese individuellen Faktoren sollten bei der Gestaltung von präventiven Maßnahmen mitberücksichtigt werden. Ziel dieser Arbeit ist die Ermittlung der Motive, welche das Essverhalten beeinflussen. Durch den Vergleich zwischen Deutschland und den Vereinigten Staaten sollen kulturelle Unterschiede untersucht werden. Anhand von klassischen Motivationsmodellen wird dann versucht ein Zusammenhang zwischen Motiv und Umsetzung zu finden. Abschließend sollen neue Ansätze für Präventionsmaßnahmen herausgearbeitet werden.

10 Ziel, Design, Methodik

10	*Fassen Sie das Forschungsvorhaben ausführlich zusammen: Forschungsziel, -design sowie gewählte Methodik, inklusive kurzer theoretischer Einbettung.*

	Mit der Erhebung soll die Motivation für persönliche Ernährungsverhalten untersucht werden. Hierzu soll ein Fragebogen genutzt werden, der auf Basis von zwei vorhandenen Fragebögen (Food Choice Questionnaire(FCQ) (Steptoe et al., 1995) und The Eating Motivation Survey (TEMS) (Renner et al., 2012)), einer verkürzten Version des Food Frequency Questionnaire (FFQ) und einzelnen Fragen zur wahrgenommenen Kontrolle über die eigene Gesundheit sowie zum Ernährungsverhalten, gestaltet wurde. Der FCQ ist ein validierter Fragebogen, der in mehreren Studien zur Ernährungsmotivation eingesetzt wurde. Der TEMS ergänzt den FCQ und ist ebenfalls ein validiertes Instrument zur Erhebung von Ernährungsmotivationen. Der TEMS Fragebogen besteht aus 78 Items und 15 Faktoren, die das Essverhalten beeinflussen. Auf einer 4-Punkte Ordinalskala („immer“ bis „nie“) werden verschiedene Motive erfragt, indem der Satz „Ich esse das, was ich esse weil...“ ergänzt wird. Diese Version des Fragebogens soll genutzt werden und die Einwilligung der Autorin dazu wurde eingeholt. Der FFQ soll untersuchen, ob die Motivation tatsächlich Einfluss auf die Ernährung hat. Hier werden verschiedene Lebensmittelgruppen angegeben (Obst, Gemüse, Kartoffeln, Reis und Nudeln, Fleisch, Milchprodukte, pflanzliche und tierische Fette, Süßigkeiten und salzige Snacks sowie gesüßte Getränke) und die Häufigkeit wird mit einer 9-Punkt-Skala (von „nie“/“weniger als 1-mal pro Monat“ bis „mehr als 6-mal pro Tag“) ermittelt. Fragen zur wahrgenommenen Kontrolle sollen helfen zu erkennen, ob die Motivation durch die gefühlte Kontrollierbarkeit der eigenen Gesundheit beeinflusst wird. Hierzu werden Fragen gestellt die mit „ich stimme zu/ich stimme nicht zu“ bzw. „richtig/falsch“ beatwortet werden können. Außerdem sollen Daten zum Alter, Geschlecht, Gewicht (bzw. BMI), Herkunft, Einkommen, Beschäftigung, Ehestand und Bildung Aufschluss zu eventuellen Unterschieden zwischen den Untersuchungsgruppen geben. Zusätzlich können Fragen zur Einhaltung von spezifischen Diäten und Einnahme von Nahrungsergänzungsmitteln können Aufschluss zum Ernährungsverhalten geben. Die Erhebung findet Online statt. Die Erschließung der Befragten erfolgt durch den Mailservice der Hochschule für Angewandte Wissenschaften Hamburg, den Mailservice des Wellness Forum Health (510 E. Wilson Bridge Road, Suite G, Worthington, Ohio 43085) und Facebook Gruppen um eine möglichst breite Gruppe zu erreichen. Keine spezifischen Daten der Befragten, wie Name, Anschrift oder E-Mail-Adressen werden erhoben. Dadurch sind Rückschlüsse auf die befragten Personen nicht möglich. Zur Auswertung des Fragebogens wird IBM SPSS Statistics genutzt. Die Auswertung erfolgt vor allem nach Herkunftsland (Deutschland oder Vereinigte Staaten), aber auch andere Zusammenhänge sollen festgestellt werden, wie zum Beispiel Unterschiede zwischen Alter, Geschlecht und BMI, Einfluss der wahrgenommenen Kontrolle auf Motivation oder der Einfluss von Motivation auf das Essverhalten.

11 Qualitätsprüfug

11	*Wie wurde/wird die wissenschaftliche Qualität des Forschungsvorhabens durch eine/n Dritte/n überprüft?*	
	Unabhängige externe Überprüfung	☐
	Überprüfung innerhalb eines Unternehmens	☐
	Überprüfung innerhalb einer multizentrischen oder interdisziplinären Forschergruppe	☐
	Überprüfung durch die hauptverantwortliche Institution oder Gastinstitution	☐
	Überprüfung innerhalb des Forschungsteams	☐
	Überprüfung durch eine Betreuerin bzw. einen Betreuer	x
	Anderes (bitte erläutern)	☐
	Keine Überprüfung durch Dritte	☐

12 Teilnehmende

12	*Wie werden die potentiell Teilnehmenden* *(i) ausgesucht (Einschluss- und Ausschlusskriterien),* *(ii) angesprochen und* *(iii) rekrutiert?* (i) Die Einschlusskriterien sind: Erwachsene (über 18 Jahre), Deutsch oder US-Amerikaner (ii) Teilnehmer werden Online, über E-Mails bzw. Facebook angesprochen (iii) Die Angaben der Teilnehmer werden nur mit Hilfe des Fragebogens erhoben. Keine Prüfung der Angaben wird erfolgen. Die Teilnehmer haben 4 Wochen Zeit den Fragebogen auszufüllen.

13 sensible Themen

13	*Werden in den individuellen Interviews/Fragebögen oder Gruppeninterviews/ -fragebögen Themen angesprochen, die sensibel, peinlich oder übergriffig sind? Oder können möglicherweise kriminelle oder andere Taten offenkundig werden, die entsprechende Maßnahmen erfordern (z.B. Untersuchung auf Drogenkonsum)?* Nein

14 Traumata

14	*Können Traumata durch die Befragung / die Untersuchung auftreten?* ☐Ja xNein *Wenn ja, wie verfahren Sie damit? (Gibt es z.B. Nachbetreuung?)*

15 Datenschutzrecht

15	*Dürfen die gesammelten Daten laut deutschem Datenschutzrecht genutzt werden?* Ja

16 Täuschung

16	Beinhaltet die Forschung eine Täuschung bezüglich der Ziele oder Absichten? ☐Ja xNein *Falls ja, werden die Teilnehmenden hierüber aufgeklärt?* *Wann?* *Wie?* *Von wem?*

17 Teilnahmrdauer

17	*Wie lange wird die Teilnahme für die Probanden voraussichtlich dauern?* Die Ausfüllung des Fragebogens sollte maximal 15 Minuten dauern

18 Teilnehmernutzen

18	*Welchen potenziellen Nutzen haben die Teilnehmenden von einer Teilnahme?*

	Keinen

19 Vertraulichkeit

19	*Welche Maßnahmen werden angewendet, um die Vertraulichkeit der persönlichen Daten zu gewährleisten? Beschreiben Sie, ob eine Pseudonymisierung (Kodierliste) oder andere Form der Anonymisierung vorgenommen wird, und wenn ja, welche und in welchem Stadium.* Die Teilnahme an der Befragung ist anonym. Keine Personenspezifische Daten werden erhoben. Somit sind Rückschlüsse auf die einzelnen Personen nicht möglich. Eine Speicherung der IP-Adressen erfolgt nicht.

20 Zugang zu den Daten

20	*Wer wird Zugang zu den Daten haben und welche Maßnahmen werden getroffen, um die Daten vertraulich zu behandeln?* Zugang zu den Daten hat nur die Autorin und die betreuenden Professoren.

21 Aufklärung

21	*In welcher Form erfolgt eine Aufklärung der Probanden über das Forschungsvorhaben? Bitte fügen Sie hierfür Belege bei.* Informationstext und Aufklärung

22 Einverständniserklärung

22	*Wird nach erfolgter Aufklärung eine schriftliche Einverständniserklärung der an der Studie Teilnehmenden eingeholt?*
	Ja x Nein ☐ *Falls ja, beschreiben Sie bitte folgende Aspekte:* *Wer holt die Einverständniserklärung ein?* *Wie wird die Aufklärung durchgeführt?* *Werden außer des Aufklärungs-/Informationsbogens noch andere Arten der Aufklärung (z.B. Video, interaktive Medien) genutzt?* *Eine Kopie des Aufklärungs-/Informationsbogens ist diesem Antrag beizufügen.* *Sollte keine Einverständniserklärung der an der Studie Teilnehmenden eingeholt werden, legen Sie hierfür bitte den genauen Grund dar.* Die Aufklärung erfolgt mit Hilfe eines Informationstextes vor Beginn des Fragebogens. Die Einverständniserklärung wird elektronisch eingeholt und erfolgt durch ankreuzen des Einverständnisses nach dem Aufklärungstext. Keine weiteren Arten der Aufklärung werden genutzt.

23 Kooperationspartner

23	*Erfordert die Rekrutierung die Involvierung weiterer Kooperationspartner?* Nein

24 Entscheidungszeit

24	*Wie viel Zeit steht den potentiell Teilnehmenden zur Verfügung, über ihre Teilnahme/Nicht-Teilnahme an der Studie zu entscheiden?*

	Solange die Umfrage online ist (ca. 4 Wochen)

25 Rücktrittsinformation

25	*Werden die Teilnehmenden darüber informiert, dass sie jederzeit (ohne Nachteile) die Teilnahme verweigern bzw. von der Studie zurücktreten können (bis zum Zeitpunkt der Anonymisierung der Daten)?* Nein, da die Erhebung anonym erfolgt.

26 Besondere Personengruppen

26	*Nehmen Personen aus einer der benannten Gruppen an der Studie teil?*	
	Kinder oder Jugendliche unter 18 Jahren	☐
	Erwachsene, die bewusstlos oder schwer krank sind	☐
	Erwachsene mit unheilbaren Erkrankungen	☐
	Erwachsene in Notfallsituationen	☐
	Erwachsene mit psychischen Erkrankungen	☐
	Erwachsene mit Demenz	☐
	Personen die in einem potentiellen Abhängigkeitsverhältnis zur Studienleitung bzw. zur/zum verantwortlichen Forschenden stehen, z.B. Menschen in betreuten Einrichtungen, Studierende etc.	☐
	Andere (bitte spezifizieren)	☐
	Bitte begründen Sie die Teilnahme der benannten Personengruppen.	

27 Erschwerte Verweigerung

27	*Gibt es potentielle Gründe, die eine Verweigerung der Studienteilnahme erschweren (z.B. wenn potentiell an der Studie Teilnehmende zugleich Studierende der/des Forschenden sind)?* ☐Ja xNein *Falls ja, erläutern Sie bitte die Gründe, die eine Verweigerung erschweren können.*

28 Anreize

28	Werden Anreize *finanzieller oder anderer Art an die Probanden oder an das Departement gezahlt?* ☐Ja xNein *Falls ja, spezifizieren Sie bitte die Art und Höhe der Zahlungen.*

29 Setting

29	*Wo findet das Forschungsprojekt statt? (Setting, Ort)* Es handelt sich um eine Online-Umfrage, die an alle Deutsche und/oder US-Amerikaner gerichtet ist.

30 Kostenträger

30	*Wer trägt die Kosten des Forschungsprojektes?* Die Autorin

31 andere Aspekte

31	*Bitte legen Sie alle weiteren möglichen ethisch zu berücksichtigende Aspekte dar, von denen das Beratungsgremium Kenntnis haben sollte.*

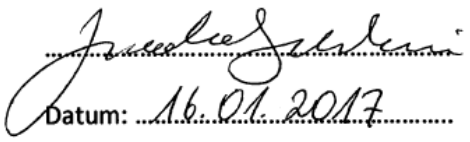
Anlagen

Welche Anlagen/Dokumente sind diesem Antrag beigefügt (bitte ankreuzen)?	
Informationsmaterial / Broschüren etc. für mögliche Studienteilnehmende	☐
Formular Einwilligungserklärung	x
Kopie des Studienprotokolls	☐
Anschreiben an die Teilnehmenden	x
Anschreiben an die Eltern / Erziehungsberechtigten etc.	☐
Bewilligungsschreiben des Ethikkomitees oder andere Genehmigungsschreiben	☐
Andere relevante Dokumente (bitte benennen) Fragebogen in Deutsch und Englisch, Einwilligung der Autoren zur Nutzung der Fragebögen	x

Unterschriften

Die obigen Angaben habe ich nach bestem Wissen und Gewissen korrekt angeführt. Ich habe die Informationen für die Forschenden/die Studienleitung gelesen und meine Verpflichtungen sowie die Rechte der Probanden / Studienteilnehmenden verstanden, insbesondere in Bezug auf die Einholung einer gültigen Einverständniserklärung.

Unterschrift der hauptverantwortlichen Forscherin /des hauptverantwortlichen Forschers:



Datum: 16.01.2017

Unterschrift der betreuenden Professorin / des betreuenden Professors an der HAW bzw. der Studienleitung (falls vorhanden):
Ich habe den Antrag geprüft und befürworte ihn in der vorliegenden Form.

……

Datum: ……

Attachment 4 Ethics Application

Hinweise zur Studie

Liebe Teilnehmerinnen und Teilnehmer,

Diese Umfrage soll das Essverhalten erforschen. Die Ergebnisse können bei der Gestaltung von Präventionsprogramen behilflich sein und helfen zu verstehen, wie ein Gesundes Ernährungsverhalten gefordert werden kann.

Darüber hinaus möchten wir auf folgendes hinweisen:

Die mit dem Fragebogen erhobenen Datensätze werden anonym und unter Beachtung der geltenden datenschutz-rechtlichen Bestimmungen verarbeitet. Sie werden anonym (ohne Nennung von Namen) digital gespeichert. Es erfolgt keine Speicherung der IP-Adressen, wodurch personenbezogene Rückschlüsse nicht möglich sind.

Von den personenbezogenen Daten (z.B. Alter, Geschlecht) erhalten lediglich die an der Studie beteiligten Mitarbeiter der Hochschule für Angewandte Wissenschaften Kenntnis. Ihre personenbezogenen Daten werden nur für diese Studie verwendet. Sie werden nicht an Dritte zu anderen Zwecken weitergegeben. Sobald der Forschungszweck es zulässt, werden Ihre personenbezogenen Daten gelöscht. Dies wird spätestens am 31.12.2026 sein (entspricht der gesetzlich vorgeschriebenen Aufbewahrungsfrist von 10 Jahren).

Sollte Sie Fragen zur Speicherung Ihrer Daten Fragen haben oder Auskünfte benötigen, können Sie sich an den genannten Ansprechpartner wenden.

Ihre Einwilligung ist freiwillig. Durch eine Verweigerung der Einwilligung entstehen Ihnen keine Nachteile.

Herzlichen Dank für Ihr Interesse und Ihre Teilnahme an unserer Studie! Für Rückfragen steht Ihnen Frau Paula Szwedowski sehr gern unter der folgenden email-Adresse zur Verfügung: p.szwedowski@me.com.

Hier geht's zur Umfrage: - Link -

Bevor die Umfrage dann startet, muss diese Erklärung geschaltet sein:

Einwilligungserklärung:

Mit dem Ausfüllen und Absenden des Fragebogens erklären Sie sich einverstanden, dass die im Rahmen dieser Studie erhobenen Daten elektronisch gespeichert und nur für wissenschaftliche Zwecke verwendet werden dürfen. *

Ja, ich stimme zu ☐
Nein, ich stimme nicht zu ☐

Attachment 5 Informed Consent German

Questionnaire Information

Dear participants,

This questionnaire is designed to explore eating behavior. It will help with encouraging a healthy lifestyle and developing preventive programs.

Please read the following information:

The data collected for the purpose of this questionnaire will be anonymous and will be handled under consideration of data security. All data will be saved digitally and anonymously (without names). IP addresses will not be recorded, making personal conclusions impossible.

The personal data (age, gender etc.) will only be accessible to the study personnel at the University of Applied Sciences Hamburg.
This data will only be used for the purpose of the current research. The data will not be passed on to third parties. As far as the research project allows it, the personal data will be erased. The personal data will be erased by 12.31.2026 (in accordance to the official retention period of 10 years).

If you have any questions about the storage of your personal data, please contact the author.

Your consent is voluntary. No personal disadvantage will be caused by refusal of participation.

Thank you for your interest and participation in this research! If you have any questions, please contact Ms. Paula Szwedowski at the following e-mail address:
p.szwedowski@me.com

To the questionnaire: - Link -

Bevor die Umfrage dann startet, muss diese Erklärung geschaltet sein:

Informed consent:

By filling out and sending this questionnaire, you agree to electronically saving your data. The data will only be used for scientific research.

Yes, I agree ☐
No, I don't agree ☐

Attachment 6 Informed Consent English

From: Britta Renner <britta.renner@uni-konstanz.de>
Subject: Re: TEMS
Date: November 23, 2016 at 9:30:34 AM GMT+1
To: Paula Szwedowski <p.szwedowski@me.com>

Sehr geehrter Herr Szwedowski,
anbei finden Sie das Paper mit dem TEMPS im Anhang.
Ich wünsche viel Erfolg bei Ihrer BA-Arebit.
Mit besten Grüßen,
Britta Renner

Am 22/11/2016 um 22:41 schrieb Paula Szwedowski:
Sehr geehrte Frau Renner,

im Rahmen meiner Bachelorarbeit möchte ich die Motivation zum Essverhalten erheben.
Hierzu würde ich gerne den TEMS Fragebogen nutzen.
Gibt es die Möglichkeit Zugang zu diesem zu bekommen?
Für Ihre Hilfe wäre ich sehr dankbar.

Best Grüße
Paula Szwedowski

--

Prof. Dr. Britta Renner
Department of Psychology
Psychological Assessment & Health Psychology
University of Konstanz
PO Box 47
D-78457 Konstanz
Phone: +49 7531 88-4679
Fax: +49 7531 88-5226
www.uni-konstanz.de/diagnostik

Attachment 7 Correspondence with B. Renner

Gender

- Female
- Male
- Other _____

Age:

Height (in cm):

Weight (in kg):

Nationality:

- German
- US-American
- Other

Highest education:

- Completed some high school
- High school graduate
- Completed some college
- Associate degree
- Bachelor's degree
- Completed some postgraduate
- Master's degree
- Ph.D., law or medical degree
- Other advanced degree beyond a Master's degree
- Other _____

Marital status

- Single (never married)
- Married
- Separated
- Widowed
- Divorced

Employment Status

Are you currently:

- Employed for wages
- Civil servant
- Other _____

1. Are you currently on a special diet?

   - Yes
   - No (continue with question 3)

2. What kind of diet are you following?

   - Gluten-free
   - Weight-reduction diet
   - Low carbohydrate diet
   - Vegetarian
   - Vegan
   - Lactose-free
   - Low-fat diet
   - Other_____

3. The following statements are:

	True	False
I have been on a weight loss diet at some point in my life		
I want to lose weight		
I am happy with my body		
I am satisfied with the way I look		

4. My main source for health information is:

- The Internet
- Print media (e.g., newspapers, magazines, books, etc.).
- TV and radio
- Health care professionals
- Friends and family
- Other: _____

I eat what I eat:		***Never***			***Always***
1	because I like it				
2	because I'm hungry				
3	because it is healthy				
4	because it tastes good				
5	because it is natural (e.g. not genetically modified)				
6	because it is inexpensive				
7	because it is low in fat				
8	because I am supposed to eat it				
9	because others like it				
10	to avoid disappointing someone who is trying to make me happy				
11	because it is readily available (e.g. at hand or being offered by someone)				
12	because it keeps me in shape (e.g. energetic, motivated)				
13	because it puts me in a good mood				
14	out of traditions (e.g. family traditions, special occasions)				
15	so that I can spend time with other people				

3

16	because it makes a social gathering more enjoyable				
17	because it cheers me up				
18	in order to indulge myself				
19	because I think it is delicious				
20	because I usually eat it				
21	because it is organic				
22	because it is fair trade				
23	because it is easy to prepare				
24	in order to reward myself				
25	because it is social				
26	because it is good value for money				
27	because it spontaneously appeals to me (e.g. situated at eye level, appealing colors)				
28	because I want to lose weight				
29	because my doctor says I should eat it				
30	because it is considered to be special				
31	because I feel stressed				
32	because it would be impolite not to eat				
33	as a distraction				
34	because it looks appealing				
35	because it is environmentally friendly (e.g. production, packaging, transport)				
36	because I grew up with it				
37	because I enjoy it				
38	because it agrees with me				
39	because it is easy to digest				
40	because I eat it regularly				
41	because I need energy				
42	to maintain a balanced diet				

43	because it belongs to certain situations				
44	because it makes social gatherings more comfortable				
45	because I have already paid for it				
46	because it is low in calories				
47	because I am sad				
48	because it makes me look good in front of others				
49	because other people (my colleagues, friends, family) eat it				
50	because I feel lonely				
51	because I recognize it from advertisements or have seen it on TV				
52	because it is on sale				
53	because it contains no harmful substances (e.g. pesticides, pollutants, antibiotics)				
54	because it fits the season				
55	because it facilitates contact with others (e.g. at business meals, events)				
56	because the presentation is appealing (e.g. packaging)				
57	because I watch my weight				
58	because I am frustrated				
59	because I don't want to spend any more money				
60	because it is pleasant to eat with others				
61	because I have an appetite for it				
62	because I am accustomed to eating it				
63	because it is pleasantly filling				
64	in order to fulfill my need for nutrients, vitamins, and minerals				

65	because it is the most convenient				
66	because it is a set part of my diet				
67	because it is fun to eat				
68	because it is free				
69	because it is nicely presented				
70	because I am overweight				
71	because my family/partner thinks that it is good for me				
72	to stand out from the crowd				
73	because it is easy and convenient to purchase				
74	because it is part of my daily diet				
75	because it is trendy				
76	because I feel like eating it				
77	because I am familiar with it				
78	because it is quick to prepare				

5. Which of the following statements do you agree with:

	Agree		Disagree
I am concerned about my health and try to take action to prevent illness			
I only worry about my health when I get sick			
Because there are so many illnesses that can hurt me these days, I am not going to worry about them			
Eating right, exercising, and taking preventive measures will keep me healthy for life			
I would rather enjoy life than try to make sure I am not exposing myself to a health hazard			
I do everything I can to stay healthy			

6. The following statements are:

	True	False
My food choices are frequently determined by other people		
When I make my mind up, I can always resist temptation and keep control of my behavior		
My health is determined by my own actions		
It is my doctor's job to keep me well		
My health is outside my control		
My health depends on how well I take care of my self		
My friends and family encourage me to eat healthy		
I often lose motivation to eat healthy in social situations		
I would eat healthier, if the people around me did so too		
I feel embarrassed if I don't eat what my friends and family eat		
Sometimes I eat unhealthy food because I don't want to feel left out		
I am afraid that other people will make fun of me because of my food choices		
I know that if I changed my diet, my friends and family would support me		

7. Most people who are important to me:

   a. Think eating healthy is important

   b. Eat healthy

   c. Encourage me to eat healthy

   d. Don't think eating healthy is important

   e. Don't eat healthy

   f. Encourage me to eat unhealthy foods

6. How often do you eat the following:

	Never (or less than once/month)	1-3 times/month	Once a week	2-4 per week	5-6 per week	Once a day	2-3 per day	4-5 per day	6+ per day
Fruit (cooked or raw)									
Vegetables (cooked or raw)									
Potatoes, rice or pasta									
Meat									
Dairy products									
Vegetable fats									
Animal fats (e.g. butter)									
Sweets									
Snack foods (e.g. chips)									
Sweetened beverages									

7. How often do you cook at home:

    a. Every day

    b. 1-3 times a week

    c. 4-6 times a week

    d. Less than once a week

    e. Never

8. Do you take vitamin supplements?

    a. Yes

    b. No

Attachment 8 English Version of the Questionnaire

Geschlecht

- Weiblich
- Männlich
- Andere _____

Alter:

Körpergröße (in cm):

Gewicht (in kg):

Nationalität:

- Deutsch
- US-Amerikanisch
- Andere

Höchster Schulabschluss:

- Von der Schule abgegangen ohne Hauptschulabschluss
- Hauptschulabschluss
- Realschulabschluss
- Abitur
- Studierende/r
- Bachelor
- Master
- Promotion
- Anderer Abschluss: _____

Familienstand

- Ledig
- Verheiratet
- Getrennt lebend
- Verwitwet
- Geschieden

Beschäftigung

Sind Sie zurzeit:

- Angestellt
- Beamtet
- Andere _____

1. Ernähren Sie sich zurzeit nach einer besonderen Diät?

   - Ja
   - Nein (weiter mit Frage 3)

2. Welche dieser Diäten halten Sie ein?

   - Gluten frei
   - Gewichtsreduktionsdiät (kalorienreduziert)
   - Low-carb Diät
   - Vegetarisch
   - Vegan
   - Lactose-fei
   - Low-fat Diät
   - Andere_____

3. Bitte kreuzen Sie an:

	Richtig	Falsch
Ich habe in der Vergangenheit eine Gewichtsreduktionsdiät gemacht		
Ich möchte abnehmen		
Ich bin mit meinem Körper zufrieden		
Ich gefalle mir so wie ich bin		

4. Gesundheitsinformationen beziehe ich von:

- Internet
- Medien (Zeitschriften, Magazine, Bücher, etc.).
- Fernseher und Radio
- Fachleuten im Gesundheitswesen (Ärzte, Diätassistenten, Ernährungsberater)
- Freunden und Familie
- Andere: _____

Ich esse das, was ich esse,:		***Nie***			***Immer***
1	weil ich es gerne mag				
2	weil ich Hunger habe				
3	weil es gesund ist				
4	weil es mir gut schmeckt				
5	weil es naturbelassen ist (z. B. nicht gentechnisch verändert)				
6	weil es preiswert ist				
7	weil es wenig Fett enthält				
8	weil es von mir erwartet wird				
9	weil andere es gut finden				
10	um jemanden, der mir eine Freude machen will, nicht zu enttäuschen				
11	weil es gerade da ist (z.B. griffbereit oder wurde mir von jemandem angeboten)				
12	weil es mich fit hält (z. B. vital, leistungsfähig)				
13	weil es gute Laune macht				
14	aufgrund von Traditionen (z. B. Familientradition, Feste)				

15	weil ich dabei Zeit mit anderen Menschen verbringen kann				
16	weil es ein Treffen angenehmer macht				
17	um meine Stimmung zu verbessern				
18	weil ich mir etwas gönnen möchte				
19	weil ich es lecker finde				
20	weil ich es üblicherweise esse				
21	weil es aus biologischer Landwirtschaft stammt				
22	weil es aus fairem Handel kommt				
23	weil es einfach zuzubereiten ist				
24	um mich damit für etwas zu belohnen				
25	weil es gesellig ist				
26	weil es ein gutes Preis-Leistungs-Verhältnis hat				
27	weil es mich spontan anspricht (z.B. in Augenhöheplatziert, farbliche Gestaltung)				
28	weil ich abnehmen möchte				
29	weil mein Arzt sagt, dass ich es essen sollte				
30	weil es als etwas Besonderes gilt				
31	weil ich gestresst bin				
32	weil es unhöflich wäre, nicht zu essen				
33	um mich abzulenken				
34	weil es gut aussieht				
35	weil es die Umwelt wenig belastet (z. B. durch Produktion, Verpackung, Transport)				
36	weil ich damit aufgewachsen bin				
37	um es mir gut gehen zu lassen				
38	l ich es gut vertrage				

39	weil es nicht schwer im Magen liegt				
40	weil ich das regelmäßig esse				
41	weil ich Energie brauche				
42	weil ich mich damit ausgewogen ernähre				
43	weil es zu bestimmten Situationen dazugehört				
44	weil es ein Zusammensein gemütlicher macht				
45	weil ich dafür bezahlt habe				
46	weil es wenig Kalorien enthält				
47	weil ich traurig bin				
48	weil ich damit vor anderen gut dastehe				
49	l andere (Kollegen, Freunde, Familie) das essen				
50	weil ich mich einsam fühle				
51	weil ich es in der Werbung oder im Fernsehen gesehen habe				
52	weil es im Sonderangebot ist				
53	weil es unbelastet ist (z. B. keine Pestizide, Schadstoffe, Antibiotika)				
54	weil es gut zur Jahreszeit passt				
55	weil es den Kontakt mit anderen Menschen erleichtert (z. B. bei Geschäftsessen, Feiern)				
56	weil es ansprechend präsentiert wird (z. B. schön verpackt)				
57	weil ich mein Gewicht halten möchte				
58	weil ich frustriert bin				
59	weil ich nicht mehr Geld ausgeben möchte				
60	weil es schön ist, mit anderen Menschen zu essen				
61	weil ich Appetit darauf habe				

62	weil ich es gewohnt bin, das zu essen				
63	weil es angenehm sättigend ist				
64	um meinen Bedarf an Nährstoffen, Vitaminen und Mineralstoffen zu decken				
65	weil es wenig Aufwand bedeutet				
66	weil es fester Bestandteil meiner Ernährung ist				
67	weil es Spaß macht, das zu essen				
68	weil es umsonst ist				
69	weil es schön angerichtet ist				
70	weil ich mich zu dick finde				
71	weil meine Familie/PartnerIn findet, dass es gut für mich ist				
72	weil ich mich dadurch von anderen abhebe				
73	weil ich es einfach und bequem kaufen kann				
74	weil es zu meiner täglichen Ernährung dazugehört				
75	weil es 'in' ist				
76	weil ich Lust darauf habe				
77	weil ich es kenne				
78	weil es schnell zuzubereiten ist				

5. Welche der folgenden aussagen treffen zu:

	Trifft zu		Trifft nicht zu
Ich sorge mich um meine Gesundheit und versuche aktiv Krankheiten vorzubeugen			
Ich mache mir nur dann sorgen um meine Gesundheit, wenn ich krank bin			
Da es heutzutage so viele Krankheiten gibt, versuche ich mir nicht zu viele Sorgen zu machen			
Eine gesunde Ernährung und ein aktiver Lebensstil, können mich langfristig fit halten.			
Ich will lieber das Leben genießen, als mir Sorgen über eventuelle gesundheitliche Risiken zu machen.			
Ich mache alles was ich kann um gesund zu bleiben			

6. Bitte kreuzen Sie an:

	Richtig	Falsch
Was ich esse, wird oft durch andere Menschen beeinflusst		
Wenn ich mir etwas vorgenommen habe, kann ich Versuchungen wiederstehen und mein Verhalten unter Kontrolle halten		
Meine Gesundheit ist von meinen Handlungen abhängig		
Es ist die Aufgabe meines Arztes mich gesund zu halten		
Meine Gesundheit ist außerhalb meiner Kontrolle		
Meine Gesundheit ist davon abhängig, wie gut ich auf mich selbst achte		
Meine Freunde und Familie ermutigen mich gesund zu leben		
In sozialen Situationen, verliere ich oft die Motivation, mich gesund zu ernähren.		
Wenn die Menschen um mich herum gesünder essen würden, würde ich mich auch besser ernähren		
Ich schäme mich, wenn ich nicht das esse, was meine Freunde und Familie essen		
Manchmal esse ich ungesunde Mahlzeiten, um mich nicht ausgeschlossen zu fühlen		
Ich befürchte, dass andere Menschen mich auslachen, wenn ich mich gesund ernähren will		
Ich weiß, dass meine Freunde und Familie mich unterstützen würden, wenn ich meine Ernährung umstelle		

7. Die meisten Menschen, die mir wichtig sind:

a. Glauben eine gesunde Ernährung ist wichtig

b. Ernähren sich gesund

c. Ermutigen mich, sich gesund zu ernähren

d. Glauben nicht, dass eine gesunde Ernährung wichtig ist

e. Ernähren sich nicht gesund

f. Ermutigen mich, ungesunde Lebensmittel zu verzehren

6. Wie oft essen Sie:

	Nie (oder weniger als 1x pro Monat)	1-3-mal/Monat	1-mal pro Woche	2-4-mal/ Woche	5-6-mal/ Woche	1-mal pro Tag	2-3-mal/ Tag	4-5-mal/ Tag	6+ pro Tag
Obst (roh oder gekocht)									
Gemüse (roh oder gekocht)									
Kartoffeln, Reis oder Nudeln									
Fleisch									
Milchprodukte									
Pflanzliche Fette (Öle)									
Tierische Fette (Butter)									
Süßigkeiten									
Salzige Snacks (z.B. Chips)									
Gesüßte Getränke									

7. Wie oft koche Sie zu Hause

   a. Jeden Tag

   b. 1-3-mal pro Woche

   c. 4-6-mal pro Woche

   d. Weniger als 1-mal pro Woche

   e. Nie

8. Nehmen Sie Nahrungsergänzungsmittel ein?

   a. Ja

   b. Nein

Attachment 9 German Version of the Questionnaire