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EXPLORING THE RELATIONSHIP BETWEEN NUTRITIONAL KNOWLEDGE, EATING BEHAVIORS AND BODY IMAGE IN YOUNG WOMEN

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ABBREVIATIONS

- BD: Body Dissatisfaction
- BED: Binge Eating Disorder
- BMI: Body Mass Index
- EAT: Eating and Activity in Teens and Young Adults
- EDE-Q: Eating Disorder Examination Questionnaire
- FC: Flexible Control
- GNKQ: General Nutrition Knowledge Questionnaire
- GNKQ-R: General Nutritional Knowledge Questionnaire Revised Version
- HES-SO: Haute École Spécialisée de Suisse Occidentale
- IES-2: Intuitive Eating Scale-2
- NK: Nutritional Knowledge
- RC: Rigid Control
- SC: Shape Concern
- UK: United Kingdom
- UNIL: University of Lausanne
- WC: Weight Concern

ABSTRACT

Living in a society where body dissatisfaction is very prominent, young women are highly affected by eating disturbances. Yet, how nutritional knowledge is related to different eating behaviors and body dissatisfaction in a non-clinical environment is unexplored. This crosssectional study aims to explore the relationship between nutritional knowledge, eating behaviors and body dissatisfaction in young adult women. The participants, aged from 20 to 35 years, completed an anonymous online questionnaire that evaluated their nutritional knowledge on sources of nutrients in foods and healthy food choices, their weight and shape concern, as well as their adherence to different eating behaviors: rigid control, flexible control and intuitive eating. Bivariate correlations and multiple linear regression analyses showed that emotional eating was positively correlated to knowledge of healthy food choices. The same section of nutritional knowledge was also positively correlated to body-food choice congruence, a dimension of intuitive eating, a relationship that was, however not supported by the study's regressions. Nutritional knowledge was not, however, found to be associated to rigid control and flexible control, while further results did not find an association between nutritional knowledge and body dissatisfaction. The results seem to suggest that nutritional knowledge alone cannot determine the eating behaviors young women with body dissatisfaction will adopt. In order for them to adopt healthy eating behaviors, behavioral and cognitive changes need to be made as well, as eating behaviors are a very complex construct. On this basis, it is recommended that body dissatisfaction be addressed from a young age and that nutritional knowledge be promoted too, in order to prevent the appearance of unhealthy weight control behaviors that could even lead to eating disorders later in life.

RESUME

Vivant dans une société où l'insatisfaction corporelle est bien présente, les jeunes femmes sont fréquemment touchées par des désordres alimentaires. Cependant, la façon dont les connaissances nutritionnelles sont liées à des comportements alimentaires différents et à l'insatisfaction corporelle hors du milieu clinique, reste inexplorée. Cette étude transversale a pour but d'explorer l'association entre les connaissances nutritionnelles, le comportement alimentaire et l'insatisfaction corporelle de jeunes femmes adultes. Les participantes, âgées de 20 à 35 ans, ont rempli un questionnaire anonyme en ligne, qui a évalué leurs connaissances nutritionnelles sur les sources des nutriments dans les aliments et le choix d'aliments sains, leur préoccupation avec leur poids et leur silhouette, ainsi que l'adhérence à des comportements alimentaires différents : le contrôle rigide, le contrôle flexible et l'alimentation instinctive. Des corrélations bivariées et des régressions linéaires multiples ont montré que manger de manière émotionnelle est positivement corrélé aux connaissances sur le choix d'aliments sains. Les mêmes connaissances étaient également positivement corrélées à la dimension de l'alimentation instinctive : congruence entre le besoin du corps et le choix des aliments, une association qui n'a quand même pas été retrouvée dans les régressions. Les connaissances nutritionnelles n'étaient pas corrélées au contrôle rigide et flexible et aucune association n'a été trouvée entre les connaissances nutritionnelles et l'insatisfaction corporelle. Ces résultats semblent indiquer que les connaissances nutritionnelles seules ne peuvent pas déterminer le comportement alimentaire que les jeunes femmes qui ne sont pas satisfaites de leur image corporelle vont adopter. Afin qu'elles adoptent un comportement alimentaire sain, des changements comportementaux et cognitifs sont nécessaires également, puisque le comportement alimentaire est un concept complexe. Sur cette base, il est recommandé que l'insatisfaction corporelle soit discutée dès le plus jeune âge. Les connaissances nutritionnelles devraient être promues également, afin de prévenir l'apparition des comportements alimentaires malsains pour contrôler le poids, qui pourraient même amener à des troubles des conduites alimentaires plus tard au cours de la vie.

1. INTRODUCTION

1.1. STUDY GOAL

Women are known to be highly affected by eating pathologies and body image issues during their life (Pliner, Chaiken, & Flett, 1990). Research throughout the years has mostly focused on young women, studying their body image and documenting its connection to mental health, as body dissatisfaction has been identified as a risk factor for the appearance of eating disorders (Stice, 2002). However, apart from clinical cases, unhealthy eating behaviors have also been identified in the general population (Hay, Girosi, & Mond, 2015; Haynos et al., 2018; Larson, Neumark-Sztainer, & Story, 2009). The internalization of societal ideals of thinness (thin ideal internalization) has become so prominent among women, leading to great body dissatisfaction and eating disturbances, especially from a young age (Thompson & Stice, 2001). Girls grow up with certain ideals presented and endorsed by the media and the society, that often make them idealize thin figures and "buy into" what is socially acceptable as beautiful (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Peers and family also contribute to the reinforcement of this ideal through comments, criticism and the idealization of thin models. This kind of pressure and exposure can result in the engagement of unhealthy behaviors that aim towards a goal that is, sometimes, impossible to achieve (Thompson & Stice, 2001; Wiseman, Gray, Mosimann, & Ahrens, 1992). This goal, attainable or not, in combination with body dissatisfaction may lead in some cases to frustration, the appearance of eating disorders (Killen et al., 1996; Stice, 2001) and other unhealthy weight control behaviors that can go undetected (Haynos et al., 2018; Larson et al., 2009).

This kind of preoccupation and negative thinking about body image can also have an impact on young women's psychological health as they get older, lowering their self-esteem and influencing their overall self-concept (Green & Pritchard, 2003; Stowers & Durm, 1996; Webster & Tiggemann, 2003). Interestingly enough, neither body dissatisfaction, nor eating disorders disappear with age in women, but rather stay present during midlife and older adulthood, as the risk factors that trigger body dissatisfaction never cease to exist and are even more pressing as women age (Keel, Gravener, Joiner, & Haedt, 2010; Tiggemann, 2004; Webster & Tiggemann, 2003). This is because as women grow, they move further away from the beauty standards of thinness and youth, that become more unattainable. Interestingly enough, only few prevention programs for the reduction of these risks have been tested in middle-aged women (Lewis-Smith, Diedrichs, Rumsey, & Harcourt, 2016). On the other hand, young women who are dissatisfied with their body face a greater risk for future escalation of eating disorder symptomatology and unhealthy weight gain (Haines, Neumark-Sztainer, Wall, & Story, 2007; Johnson & Wardle, 2005). A healthy relationship with food and our body needs to be established from a young age, as adolescence and young adulthood have been identified as the periods that most eating disorders manifest for the first time (Stice, Marti, & Rohde, 2013). This underlines the importance of addressing body image issues and providing the means to resist body dissatisfaction and prevent unhealthy eating behaviors and eating disorders from developing from an early age.

A multitude of prevention programs of all sorts were developed and evaluated with more or less success to address body dissatisfaction together with unhealthy lifestyle (Le, Barendregt, Hay, & Mihalopoulos, 2017; Watson et al., 2016). Among those that emerged as efficient, the Healthy Weight program (Stice, Rohde, & Shaw, 2006) which promotes the principles of healthy weight management, was repeatedly evaluated with success. This program uses different behavioral weight control strategies that include, among other means, nutritional education. This seems to suggest that incorporating and tackling in addition nutritional knowledge in these efforts, might not only help with the adoption of healthy eating behaviors and the decrease of eating disorders symptoms, but also have a positive effect on body image. On the other hand, some studies have shown that individuals suffering from eating disorders (that clearly do not have a positive body image), demonstrate quite good knowledge about nutritional matters (Beaumont, Chambers, Rouse, & Abraham, 1981; Laessle et al., 1988). Yet, people in the general population with body dissatisfaction are less likely to seek professional nutritional guidance in order to address the issues that concern them and rather adopt unhealthy weight control behaviors. Therefore, this study will explore the nutritional knowledge, body image and eating behaviors in young women of 20 to 35 years of age in a non-clinical environment, in order to discover their relationship and explore how nutritional knowledge is associated to different eating behaviors and body dissatisfaction.

At first, a description of the concepts of body image, body dissatisfaction and eating behaviors will be given, followed by a short presentation of healthy weight prevention programs, the methods of the study and finally its results.

1.2. LITERATURE REVIEW

1.2.1. Body Image

1.2.1.1. Concept and construction of body image

The concept of body image has been greatly explored over the years and it has not been that long ago that the body of research shifted its focus from young girls towards a variety of populations, ages and settings. This has allowed to create a concept that is enriched by different conceptual approaches and that describes the meaning of body image amidst the human complexity, through empirical data and clinical observations. The concept of "body image" was first defined by the Austrian neurologist Paul Schilder (1935) as "the picture of our own body which we form in our mind, that is to say, the way in which the body appears to ourselves". In his work he insisted that body image be studied by taking into consideration its neurological, psychological and sociocultural characteristics. It plays an important role in a person's self-concept (how someone views or understands him or herself), as body image is one of the components that among others (ex. social skills, work status, sports, friendships etc.) contribute altogether in a person's self-esteem (how someone perceives his or her own self-worth).

As years went by and research continued, body image was identified to be a complex and multidimensional construct (Banfield & McCabe, 2002; Cash, 2004; Cash & Grasso, 2005; Cash & Smolak, 2011), that includes attitudinal, perceptual, behavioral and cognitive components (Roy, 2010). It was defined as the attitude towards one's body: how one views, thinks, feels and acts with regards to his body and appearance (Cash, Ancis, & Strachan, 1997). This includes the importance one attributes to body image in his over-all concept and the actions one takes in order to improve or change his appearance. Body image differentiates with age, gender, ethnicity, culture and most importantly the current state of body and mind, meaning the biological, physiological, psychological and social circumstances (Cash & Pruzinsky, 1990; Cash & Smolak, 2011; Grogan, 2008). During its development throughout the lifespan, however, its sources of influence remain the same; cultural media, family structures and interpersonal relationships create body image experiences (Cash & Smolak, 2011) that form each person's relationship with their body. According to Thompson et al. (1999), the influences of media, parents and peers comprise the so-called tripartite influence model that affects both directly and indirectly individuals' body image, by the degree to which a person internalizes the prevalent societal ideals and by the person's tendency to compare his or her appearance to others'. Due to pressure from these sources (especially the media and social networking sites), more and more people define (self-concept) and evaluate (self-esteem) themselves based mostly on their appearance.

1.2.1.2. Body dissatisfaction

Currently, most of the research on body image focuses on shape and weight concerns, and more particularly on body assessment. Evidence shows that most women are dissatisfied with their current appearance and wish they had a thinner figure (Stevens & Tiggermann, 1997), even though their current weight may be within the normal range. In fact, body dissatisfaction is so prevalent, especially among young women, that it has been named "a normative discontent" (Rodin, Silberstein, & Striegel-Moore, 1985). Data from the Federal Office of Statistics in Switzerland (OFS) (Enquête Suisse sur la Santé 2012, OFS 2014) showed that among people with normal weight, 20% of men and 38% of women declared wanting to lose weight. Moreover, in a survey that took place in the UK in 2012 and consisted of 77,000 respondents (Diedrichs, Rumsey, Halliwell, & Paraskeva, 2012), it was shown that over 50% of the sample disliked the reflection of their body in the mirror. Further data from the OFS showed that only three quarters of the population (from a sample of 21,597 persons with an age of more than 15 years) are satisfied with their current weight. In addition, among overweight individuals only 72% of men and 50% of women declare to be satisfied with their weight, whereas these percentages drop even lower when it comes to obese people (43% for men and 33% for women). Moreover, evidence shows that young women manifest higher levels of body dissatisfaction than men do (Davison & McCabe, 2005; Kashubeck-West, Mintz, & Weigold, 2005; Lokken, Ferraro, Kirchner, & Bowling, 2003). It has also been shown that dissatisfaction levels increase progressively during adolescence and early adulthood (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013).

This dissatisfaction often derives from comparisons individuals make, when they compare their current body shape to ideal figures. Researchers, when evaluating body image, actually use silhouette drawings to assess the choices individuals make when selecting their perceived and ideal body figures (Stevens & Tiggermann, 1997). These "ideal figures" of female beauty, that are presented by the media, showcase young, slim and beautiful women that project youthfulness and success.

In more recent years however, along with the beauty ideals that praise these thin figures, body shape has also evolved towards a figure that is more athletic and muscular, but still quite thin (Benton & Karazsia, 2015; Homan, 2010; Ramme, Donovan, & Bell, 2016). Exposure to these athletic ideals has been suggested to contribute to women's drive for thinness, body

dissatisfaction, as well as muscularity, through the adoption of behaviors that aim towards a toned, yet slim, body (Field et al., 2005; Thompson, Schaefer, & Menzel, 2012; Tiggemann & Zaccardo, 2015). A recent study that was carried out among young women in France found that sociocultural pressure from media and interpersonal relationships (from peers and romantic partners) were the main sources of influence for an increased body dissatisfaction, drive for thinness and muscularity concerns through appearance comparison (Girard, Rodgers, & Chabrol, 2018). Similarly, and although eating and body image issues among men have been understudied compared to women, it is known that they are also preoccupied with their body image and muscularity (McCabe & Ricciardelli, 2004). More particularly, muscle dysmorphia, a disorder characterized by concerns about muscularity and low body fat percentage (mesomorphic ideal) (Pope, Gruber, Choi, Olivardia, & Phillips, 1997) has been found to affect men (Klimek, Murray, Brown, Gonzales Iv, & Blashill, 2018), by engaging in disordered eating behaviors in order to achieve a muscular and lean body (McFarland & Kaminski, 2009). Similar to women being driven to body dissatisfaction by media, peers and family pressure via internalization of societal body ideals (Thompson et al., 1999), men are also affected by social pressures via internalization of mesomorphic ideals, muscularity enhancement behaviors and eating concerns (Tylka, 2011). Nevertheless, given the fact that these mechanisms are probably different to women's, for the purposes of this study we are going to focus on women's thin internalization ideals and underlining mechanisms.

Looking now closer to the impact media can have, it has been found that it cannot be the same on every person; different psychological processes occur and determine one's vulnerability towards body dissatisfaction (Dittmar, 2009). Many older women, for example, whose body is changing with age, use cognitive control mechanisms and are able to reevaluate the importance of body image in their overall self-concept and self-esteem. Although body dissatisfaction is still prevalent among that age, using cognitive techniques, women can reject the internalization of the thin and beauty ideals, adjust their standards and shift their concern towards their health and functionality, rather than focusing on their appearance (Jankowski, Diedrichs, Williamson, Christopher, & Harcourt, 2016; Piran, 2016; Webster & Tiggemann, 2003).

On the other hand, more prone to being affected by these societal ideals is the increasing number of people who are overweight or obese. These people (in comparison to normal-weight people) are more likely to receive negative comments and looks about their image, stigmatizing them for their figure. This has been proven to cause body dissatisfaction in children (Harriger & Thompson, 2012). It has been shown that in Switzerland, two thirds of people who are overweight and more than 80% of people who are obese declare wanting to lose weight

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(Enquête Suisse sur la Santé 2012, OFS 2014). This weight stigma can have a detrimental effect on targets' physical and psychological health (Goldfield et al., 2010; Neumark-Sztainer et al., 2002), and consequently affect their employment, relationships, academic performance and participation in physical activities (Alberga, Russell-Mayhew, von Ranson, & McLaren, 2016; Krukowski et al., 2009; Rudolph, Wells, Weller, & Baltes, 2009; Vartanian & Novak, 2011).

1.2.1.3. Consequences of body dissatisfaction

According to the importance individuals attribute to body image in their life and in the definition of themselves, they can be prone to being psychologically and physically affected by it. Body dissatisfaction has been associated with a lot of mental and psychological consequences among children, young women and middle-aged adults (Stice, 2002; Thompson et al., 1999; Wichstrøm, 1999; Woodside & Staab, 2006). More particularly, it has been linked to affective disorders like anxiety and depression, as well as a low self-esteem and an increased risk of disordered eating, such as anorexia and bulimia nervosa and binge eating among children, men and women (Forman & Davis, 2005; Johnson & Wardle, 2005; Ricciardelli, McCabe, Holt, & Finemore, 2003; Ricciardelli, McCabe, Lillis, & Thomas, 2006; Tylka, 2004). Its impact on the general population is evident as well, as the use of unhealthy eating behaviors (ex. dieting, skipping meals, refusing calorie-dense foods, counting calories – that differ from clinical eating disorders) and strategies has also been identified in the community (Hay et al., 2015; Haynos et al., 2018; Larson et al., 2009), suggesting that body dissatisfaction can have an effect on the nutritional behavior of everyone susceptible to it. These behaviors can have various physical outcomes, such as low body weight, overweight, obesity or they can go undetected without any visible sign or outcome.

1.2.2. Eating Behaviors

1.2.2.1. Weight control behaviors in the general population

Eating behaviors, like any other human behavior, are created during childhood and evolve during adolescence and early adulthood, when parents' influence decreases and individuals start making their own food choices. Attempts at weight control are quite common regardless of age. Data shows that one-third of adolescents (Neumark-Sztainer & Hannan, 2000) and two-thirds of adults (Reba-Harrelson et al., 2009) engage in some form of dieting in order to control their weight, behavior that has been shown to increase the risk of eating disorders (Hilbert et al., 2014). However, these attempts can vary in nature, from moderate to more extreme ones. Moderate methods to lose or maintain weight (e.g. replacing sugar drinks with

water) have been found to be beneficial for the health of overweight adolescents and helpful for those with normal weight, as they can prevent excess weight gain later in life (Barlow & Expert Committee, 2007). However, disordered eating behaviors, like binge eating and unhealthy weight control behaviors (e.g. fasting, vomiting, taking diet pills, laxatives or skipping meals) - found to be used by a small, yet important portion of adolescents and adults (Bould, De Stavola, Lewis, & Micali, 2018; Mitchison, Hay, Slewa-Younan, & Mond, 2012; Smink, Hoeken, Oldehinkel, & Hoek, 2014) - have been associated with poor dietary quality, eating disorders, negative psychological consequences (e.g. depression), and an increased risk for weight gain and obesity (Neumark-Sztainer et al., 2006; Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011; Santos, Richards, & Bleckley, 2007). More specifically, early results from the longitudinal project EAT (Eating and Activity in Teens and Young Adults) in accordance with results from cross-sectional studies (Dykes, Lhussier, Bangash, Zaman, & Lowe, 2012; Neumark-Sztainer, Story, Resnick, & Blum, 1996; Neumark-Sztainer et al., 2011; Story, Neumark-Sztainer, Sherwood, Stang, & Murray, 1998), have indicated that the persistent use of unhealthy eating behaviors, that aim to control body weight, is related with poorer dietary intake and less frequent meals, while healthy weight control behaviors are related with better dietary intake, indicating the need to guide adolescents who are preoccupied with their weight and engage in unhealthy weight control behaviors by encouraging and promoting healthful eating habits. This initiative could help adolescents maintain a healthy weight and achieve optimal nutritional goals (Larson et al., 2009).

In addition, studying longitudinally the relationship between body satisfaction and body mass index (BMI) in overweight young adults, it was found that greater body dissatisfaction led to a greater increase in BMI compared to overweight girls who were the most satisfied with their body. These results (Loth, Watts, van den Berg, & Neumark-Sztainer, 2015) suggest that body satisfaction may be beneficial for girls in terms of long-term weight management, bringing down the belief that body dissatisfaction could motivate overweight individuals to lose weight (Heinberg, Thompson, & Matzon, 2001).

Looking into the persistence of weight control behaviors from young to later adulthood, results from the 15-year population-based project EAT showed that not only did they continue to be prevalent, but dieting increased for both genders, while high-frequency dieting and unhealthy weight control behaviors increased only for men (Haynos et al., 2018). These results suggest once more that interventions aiming to promote healthy eating behaviors and decrease unhealthy weight management are needed from an early age. Adolescence and early adulthood have been identified as the most potential periods for the appearance of eating disorders (Stice et al., 2013), while at the same time, evidence also shows that moving further

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into adulthood people tend to increase their body weight (Goldschmidt et al., 2018), as they bear more responsibilities of different sorts (Arnett, 2000).

Results from an observational study (Hay et al., 2015) that took place in Australia studying a representative sample of Australian adolescents and adults showed that the prevalence of binge eating disorder (BED) and sub-threshold BED was higher (13%) than both anorexia and bulimia nervosa (1%), highlighting the alarming presence and the expanded demographic distribution of disordered eating behaviors in the older adolescent and adult community. Other findings also revealed that obesity was a common characteristic of BED as well as bulimia nervosa, suggesting that weight management should also be taken into consideration when dealing with eating disorders. Studying another sample of Australian population, part of the same team of researchers also found that disordered eating behaviors that can be seen in clinical samples, were also found in the general community (da Luz et al., 2018). More particularly, behaviors like strict dieting, purging and binge eating were quite prevalent in the general community and interestingly enough, strict dieting was associated with a higher BMI. Again, this highlights the need to include both approaches – behavioral and cognitive ones – in weight management programs that deal with people struggling with their weight and image, as working on inner triggers could help reduce the possible negative outcomes of disordered eating behaviors. The promotion of overall well-being should be part of any approach towards the prevention and treatment of overweight or obesity.

1.2.2.2. Cognitive restraint

Looking a little closer into strict dieting and what it could actually hide, the first notion of its meaning was first introduced by Herman and his colleagues in 1975 (Herman & Mack, 1975; Herman & Polivy, 1975), when they used the term "restrained eating" to describe the tendency to restrict food intake in order to control body weight. The meaning of this term was measured by a Restraint Scale who also measured counter-regulation (the act of overeating, losing control), that failed however to serve as a model to understand in a better way the nutritional behavior of obese people (as to whether they would lose control in case of dietary restraint), as it already selected people that had a tendency to lose control over food, omitting the fact that restrained eating can also exist in obese people without the act of counter-regulation (Hibscher & Herman, 1977; Ruderman & Christensen, 1983).

Later on, in 1985, Stunkard and Messick (Stunkard & Messick, 1985) came and created a new scale that was called "Eating Inventory" that used part of other scales (including the Restraint Scale) and measured three major factors: cognitive restraint, disinhibition (alternatively called

"uncontrolled eating", or "free-eater") and hunger. This scale has been used in numerous clinical conditions (Stunkard & Waterland, 1997) and can predict outcome prior to treatment for obese persons, as it can profile people unveiling their eating behavior (as to whether they show high restraint and low disinhibition or the opposite). This "intermediate" step allowed Westenhoefer (Westenhoefer, 1991) to propose an important upgrade to the instrument, dividing the complex construct of the Cognitive Restraint Factor in to two different types of restraint, depending to the extent at which they correlated with disinhibition and thus unveiling its different facets. This distinction made it possible to understand some of the conflicting data in the field of eating restraint.

The two types of restraint that were created were called Rigid and Flexible Control and their respective scales took their final form and were validated in 1999 by Westenhoefer and his colleagues (Westenhoefer, Stunkard, & Pudel, 1999). Rigid control is a more extreme, all-ornothing approach to eating, dieting and weight and it includes behaviors such as counting calories to control weight, consciously dieting, being emotionally affected by weight fluctuations, being conscious of foods eaten, feeling guilty, skipping meals, being dependent of a diet plan, avoid eating and buying calorie-dense foods and shopping for low-calorie ones etc. On the other hand, flexible control is a more balanced approach to eating, dieting and weight, that is characterized by behaviors such as deliberately taking smaller portions of food or restricting intake to control weight, eating light foods, engaging in compensation by consciously eating less after a calorie-dense food, paying attention to figure changes, being aware of what you eat and holding back on meals in order to avoid any possible weight gain etc. These two different types of restriction, made it possible to realize that rigid control was responsible for the contribution of cognitive restraint to counter-regulation, suggesting that high disinhibition is associated with higher food intake in the presence of rigid control. On the contrary, flexible control is associated with lower food intake in the presence of low disinhibition.

The different type of restrained eating is what is going to determine the association between dietary restraint per se and disinhibited or disordered eating patterns, therefore, the outcome of its action (Westenhoefer et al., 1999). Rigid control is considered to be an important risk factor for disordered eating (C. F. Smith, Williamson, Bray, & Ryan, 1999; Stice, 2002; Stice, Marti, & Durant, 2011; Westenhoefer et al., 1999), like binge eating, increased BMI, weight management difficulties (incapability of weight reduction or weight maintenance), mood disturbances, excessive concern with body size/shape (Stewart, Williamson, & White, 2002) and excessive thinking about eating and pathological dietary behaviors (Brown, Parman, Rudat, & Craighead, 2012; Eiber, Mirabel-Sarron, & Urdapilleta, 2005). Programs that promote

this type of eating behavior exist and although, they do deliver short-term results, their longterm effects show that dieting to fight obesity is counterproductive, as most of the individuals regain the weight they had once lost (Mann et al., 2007). On the other hand, flexible control has been shown to be associated with less disturbed eating behaviors, lower levels of depression and anxiety, better eating and weight-related outcomes like lower body weight and a higher possibility of weight reduction and maintenance (C. F. Smith et al., 1999; Stewart et al., 2002; Westenhoefer et al., 2013, 1999). More particularly, rigid control has been positively associated with binge eating and overeating among German and US adults in the community, whereas flexible control has been inversely linked to these behaviors (Smith & Hawks, 2006; Westenhoefer, Stunkard, & Pudel, 1999). These findings led to the belief that flexible control is an eating behavior that should be favored and promoted (instead of rigid control) in weight management programs and towards well-being.

However, there are studies that do not support this positive link between flexible control and health outcomes (Provencher, Drapeau, Tremblay, Després, & Lemieux, 2003). In fact, flexible control has also been found to be associated with disordered eating (Timko & Perone, 2005). These conflicting findings around flexible control challenge professionals as to whether this nutritional behavior should be adopted and chosen as a healthy approach towards eating and weight management. This contradictory perception of flexible control may be due to its shared variance with rigid restriction. These two constructs, although different from one another (according to their creators), are not in fact completely distinct; they have been found to be strongly correlated with each other in different male and female samples (Timko & Perone, 2005; Westenhoefer, 1991; Westenhoefer, Broeckmann, Münch, & Pudel, 1994; Westenhoefer et al., 2013), making it difficult for health officials and professionals to conclude as to whether flexible control can exist without rigid control and therefore promote it.

1.2.2.3. Intuitive eating

Amidst this conflict around dietary restraint, intuitive eating appears to be an alternative healthy eating behavior. Intuitive eating was first introduced by dietitians Tribole & Resch in 1995, as an adaptive and flexible form of eating that is strongly connected with internal physiological needs, hunger and satiety cues (Tribole & Resch, 2003, 2012). It is considered to be a dynamic integration between body and mind, that rejects the diet mentality. According to its creators, it is a personal process of honoring health, in order to meet your physical and psychological needs. Individuals that eat intuitively are at peace with food and find pleasure in it. In addition, their food consumption has an overall balance, as they will be more likely to eat less after a heavy meal, only because they eat accordingly to their natural hunger.

Intuitive eating's principles (Tribole & Resch, 2003) served for the creation of a scale (IES: Intuitive Eating Scale, Tylka, 2006) that evaluates and unveils its construct via four different domains: the i. Unconditional Permission to Eat (UPE) domain, that describes the ability of individuals to eat unconditionally when hungry, without demonizing food, the ii. Eating for Physical Rather Than Emotional Reasons (EPR) domain, that is about the attitude of individuals that do not eat due to emotional reasons, stress and boredom, but choose to eat because of hunger, honoring their feelings without using food. The third domain, iii. Reliance on Hunger and Satiety Cues (RHSC) that is about the ability of people to trust and listen to their internal hunger and satiety cues when they eat, and therefore decide how much and when to eat, respecting their fullness, and lastly, the Body-Food Choice Congruence (B-FCC) domain (that was missing from the original the IES scale, Tylka & Kroon Van Diest, 2013), that describes the ability of individuals to make food choices that are also going to benefit their health and functionality (meaning whether food choices will match the body's needs), respecting and therefore honoring their health and body. This last domain is based on something the creators of intuitive eating had called "gentle nutrition" and is the only domain that focuses on nutrition itself and actual healthy food choices besides interoceptive awareness, a process that was the common characteristic of the first three domains and that works by integrating bodily sensations, cognitive processes and emotional feelings (Craig, 2014) in order to raise awareness (in this particular case, body awareness).

This form of eating has been consistently found to have numerous benefits for health and wellbeing (Craig, 2014). More particularly, results from cross sectional studies have shown that intuitive eating is associated with reduced eating disorder symptomatology, like emotional, uncontrolled and binge eating, (Camilleri et al., 2015; Denny, Loth, Eisenberg, & Neumark-Sztainer, 2013; Tylka, 2006; Tylka & Kroon Van Diest, 2013), lower triglycerides and cardiovascular risk, higher levels of high density lipoproteins (Hawks, Madanat, Hawks, & Harris, 2005), lower BMI (Denny et al., 2013; Hawks et al., 2005; Madden, Leong, Gray, & Horwath, 2012; T. Smith & Hawks, 2006; Tylka, 2006; Tylka & Kroon Van Diest, 2013), higher self-esteem, satisfaction with life, lower negative effects, increased body acceptance and appreciation (Tylka, 2006; Tylka & Kroon Van Diest, 2013), lower body surveillance, body shame and pressure for thinness, lower internalization of the thin ideal and body dissatisfaction (Tylka, 2006), higher self-compassion (Schoenefeld & Webb, 2013), lower self-silencing (Shouse & Nilsson, 2011) and higher pleasure with food and eating (T. Smith & Hawks, 2006).

Intervention studies that have implemented intuitive eating strategies have also shown similar positive results for both physical and psychological indicators (Schaefer & Magnuson, 2014).

More particularly, an intervention program (Bacon, Stern, D Van Loan, & Keim, 2005) that was built on size acceptance and intuitive eating, performed a clinical trial on white, obese, female chronic dieters that offered an adaptive support to weight loss as opposed to a diet approach (diet group). The intuitive eating program was found to achieve long-term weight maintenance and behavior change, decrease cognitive restraint, improve self-esteem, body image and reduce depressive symptoms. This program also paved the way for a body acceptance movement to be created, the "Health at Every Size®" movement, that addresses healthy eating and promotes body positivity and a healthy relationship with food.

Although intuitive eating has repeatedly proved to be an eating behavior with numerous positive connections to physical and psychological health indicators, most of the results come from cross-sectional and intervention studies that were almost all realized on obese, young females. In order to expand the findings and also explore the relationship of intuitive eating, rigid control and flexible control within a same sample, two different teams of researchers (Linardon & Mitchell, 2017; Tylka, Calogero, & Daníelsdóttir, 2015), compared these eating behaviors with each other and with regards to various health indices and body image concerns in community samples that comprised of both males and females. According to the findings and hypotheses of Tylka, Carogero and Daníelsdóttir, flexible control and intuitive eating seem to be qualitatively distinct constructs, as they were found to be inversely associated with one another and intuitive eating's variance to indices of well-being and BMI contributed to a much greater degree compared to the one of flexible control. Flexible control was in turn strongly correlated to rigid control that consistently predicted negative health outcomes. In addition, it was shown that flexible control is suppressed from revealing its positive facet and connection to well-being and BMI, because of its high variance with rigid control, making the researchers conclude that flexible control presents an important overlap with rigid control and that intuitive eating must be an independent construct from flexible control. Linardon and Mitchell (2017) found similar results and took even further their study on intuitive eating, showing that it repeatedly predicts lower eating disorder symptomatology and body image concerns and revealing that it is mediated by low levels of dichotomous thinking and higher levels of body appreciation. Concerning flexible control's relationship with disordered eating and body image concerns, it was shown as here as well that flexible control is a predictor of higher levels of disordered eating and body image concerns when its shared variance with rigid restriction is taken into consideration. All these enlightening results led these teams of researchers to suggest that intuitive eating should be used as part of eating disorder prevention programs.

1.2.3. Prevention Programs for Body Dissatisfaction

Programs being deliberately designed for the prevention of body dissatisfaction do not generally exist. However, programs designed for the prevention of eating disorders do exist and aim directly at body dissatisfaction, given the fact that it has been identified as a risk factor for the appearance of eating disorders (Stice, 2002). In addition, programs designed for the prevention of obesity, that do not explicitly aim directly at body dissatisfaction, have also proven to have a direct effect on it. Ultimately, having looked at these different eating behaviors that we can characterize as healthy or unhealthy, we can see that there is a link between them and clinical eating disorders. This is of great interest as targeting these eating behaviors, by preventing (or decreasing) the adoption of unhealthy ones and promoting the adoption of healthier ones, we can work towards body acceptance and the prevention of the actual eating disorders that affect in great way, along with body dissatisfaction, both physically and psychologically the health of individuals.

Providing hence the means for the adoption of healthy eating behaviors and body acceptance is of great importance. Some of the prevention programs that exist and have targeted obesity have managed to achieve these goals. The *Healthy Weight* program (Stice, Rohde, et al., 2006), an obesity prevention intervention for young body-dissatisfied women with several follow-ups in time (Stice, Marti, Spoor, Presnell, & Shaw, 2008; Stice, Shaw, Burton, & Wade, 2006), has successfully managed to reduce the initial body weight of its participants, reduce eating disorder symptomatology and most importantly reduce the future risk of appearance of eating disorders and obesity (60% and 50% percent in a 3-year follow-up respectively). This program is based on body acceptance and works by using different behavioral weight control strategies in order to inform individuals about caloric intake, physical activity and help them overcome any barriers, with an ulterior goal of creating healthy lasting eating behaviors that are going to benefit both body and mind. Among the four strategies this program uses, the dissonance-based body acceptance program^{*} and the healthy weight management program showed the most promising results.

(*Note: or *Body Project*, that was designed to help adolescent girls and young women resist the thin-internalization ideal via voluntary arguments against it, that would result in a reduced attachment to the ideal and consequent decreases in eating disorder risk factors and disordered eating behaviors ("Body Project Collaborative Home Page").

The healthy weight intervention aimed at an overall balance (between energy input and output) in order to achieve a healthier body weight and body satisfaction. It focused on achieving a healthy-ideal that was contrasted to the thin-ideal, and through different sessions it provided

the means to achieve it. Among these means, the participants received instructions on how to acquire a healthy balanced diet (information on substitution of high-calorie foods with lowcalorie ones that are more filling and satisfying, encouragements to start a meal by foods that are high in fiber, water and vitamins, information on portion control, changing food environment, health benefits of fruits and vegetables and explications on how the metabolism works) and were encouraged to gradually change their dietary behaviors, in combination with physical exercise, in order to adopt a healthy lifestyle. These dietary changes were adapted to their personal needs and habits and they were offered support and guidance in future sessions, in order to improve their habits and overcome any obstacles they would meet. Encouragement and motivational enhancement activities to acquire healthy weight management skills were two of the main characteristics of this intervention. The long-term effects of this intervention are continuously looking to be promising and enduring. In the 3-year follow-up, outcomes like the thin-ideal internalization, body dissatisfaction, eating disorder symptomatology, negative affect, psychosocial impairment, weight gain and risk for future appearance of eating disorder and obesity seemed decreased compared to assessment-only controls (Stice et al., 2008). Further evaluations of this particular intervention showed that it reduced eating disorder symptoms, body dissatisfaction and unhealthy weight gain in young women compared to a control group, proving its efficacy and thus underlying the importance of tackling body image issues and eating disturbances (Stice, Rohde, Shaw, & Marti, 2012).

Another prevention initiative, the New Moves program of Neumark-Sztainer et al., (2010), a school-based program that aimed at preventing weight-related problems in young girls used as well nutritional education as part of its intervention, with its main focus however being on physical activity. More particularly, this program drew upon the principles of eating disorders and obesity (focusing on behavioral change) and included physical education classes, selfempowerment sessions, motivational interviews, lunch get-togethers and parent outreach activities, in order to meet the needs of adolescent girls who were at risk of becoming or were already overweight due to a sedentary life. Concerning the nutritional components of the intervention, the participants followed nutrition lessons (named "Be Fueled", within their physical education classes) and individual counseling sessions and were encouraged to increase the consumption of fruits and vegetables, decrease the one of sugar-sweetened beverages, eat breakfast every day and pay attention to portion sizes and their body's signs of hunger and satiety. Within its philosophy was the creation of a supportive environment and a body positivity and appreciation movement. Although no significant changes were made in the BMI and the body fat percentage of the girls, their weight control behaviors, eating patterns, physical activity and body perception were improved in a 9-month period compared to the control groups.

Therefore, we see that prevention programs for eating disorders and obesity do work and include as well nutritional components as part of their interventions, that have an impact on body dissatisfaction. Two recent reviews on this field (Le et al., 2017; Watson et al., 2016) showed that the healthy weight interventions (among other interventions) were able to decrease eating disorder symptoms and the BMI of individuals. Other interventions such as media literacy, cognitive dissonance and cognitive behavioral therapy showed to be able to reduce in addition eating disorder symptoms and dieting, as well as shape and weight concerns for both males and females. However, concerning the decrease of eating disorders' risk factors, most universal approaches showed significant modest effects.

1.2.4. Nutritional Knowledge in Eating Disorders

Looking now into the relationship between nutritional knowledge and eating disorders, studies have shown that those who suffer from them seem to have quite good knowledge on nutritional matters. Studying patients with anorexia nervosa, Beaumont, Chambers, Rouse and Abraham (1981), found that most patients had higher nutritional knowledge compared to their matched controls, with regards to calories in foods, dieting and dietary fiber. Their diets were also found to be lower in energy and fat and higher in protein intake. However, not all participants scored high in nutritional knowledge and 25 per cent of them did not score as well as their selected controls. Another study (Laessle et al., 1988) also found that patients with eating disorders (anorexia nervosa or bulimia) had better nutritional knowledge compared to controls on macronutrients, dietary fiber and calories about food. However, knowledge concerning micronutrients was similar to controls and in this study, as well, there were patients that scored worse than controls. These findings seem to suggest that for individuals with eating disorders, nutritional knowledge is perceived as a means in order to reinforce restrictive and unhealthy eating behaviors. It also suggests that the complexity of eating disorders goes above and beyond nutritional knowledge.

1.2.5. Research Question, Objectives and Hypotheses

Ultimately, given that we live in a society where body dissatisfaction is constantly nurtured and can not only affect the well-being of individuals, but also trigger the adoption of unhealthy weight control behaviors (that could even lead to the appearance of eating disorders), it is clear that body image issues need to be addressed in order to prevent this type of consequences. Positive body image patterns and healthy eating behaviors need to be promoted as early as possible. In addition, as already mentioned, eating disturbances are very prominent among

young women (Thompson & Stice, 2001) and body dissatisfaction is so common in young ages that is has been named a "normative discontent" (Rodin et al., 1985). In fact, adolescence and young adulthood have been identified as peak periods for the appearance of eating disorders (Stice et al., 2013). Thus, this study is going to focus and address the eating behaviors and body dissatisfaction of young adult women, as it has also been shown that they seem to be facing greater risk for future escalation of eating disorder symptomatology and unhealthy weight gain (Haines et al., 2007; Johnson & Wardle, 2005).

Some of the prevention programs that exist and have successfully addressed these issues (as seen above), have also incorporated nutritional knowledge as part of their strategies, improving ultimately the body image perception of the individuals and proving the value nutritional knowledge can have in the adoption of healthy weight control behaviors and, as seen, body image acceptance.

However, in the general population, the times someone with body image issues (young women in the particular case) seeks nutritional advice and help from a professional are scarce. Most women with body dissatisfaction will most likely adopt restrictive and unhealthy eating behaviors, before deciding to acquire nutritional knowledge from a professional. On the contrary as mentioned above, individuals suffering from eating disorders (who are clearly body dissatisfied) have been shown to have better nutritional knowledge compared to control subjects.

Therefore, despite the fact that many studies have examined the effects of negative body image and its relationship with various aspects of psychopathology (i.e. eating disorders, depression, low self-esteem), relatively little research has been made concerning the association between nutritional knowledge, eating behaviors and body dissatisfaction in young women in a non-clinical environment. How is nutritional knowledge associated to different eating behaviors and body dissatisfaction?

Could healthier eating behaviors and body satisfaction be related to better nutritional knowledge? And inversely: could body dissatisfaction and unhealthy eating behaviors be related to poorer knowledge? In other words, could nutritional knowledge determine the eating behaviors women that are dissatisfied with their body adopt?

The purpose of this study is to find a possible link between nutritional knowledge body dissatisfaction and eating behaviors. Therefore, a clearer understanding of this relationship

could help towards the prevention of unhealthy eating behaviors from developing at an early age and also towards resisting body dissatisfaction.

Therefore, in order to answer to our research question, we are going to test four hypotheses.

However, it has to be noted that, although intuitive eating, in contrast to flexible control, has been consistently shown to be connected and predict positive physical and psychological health outcomes, for the testing of the hypotheses of this study, as healthy eating behaviors we are going to consider both flexible control and intuitive eating, as we cannot ignore some of the positive outcomes flexible control has shown to be connected to as a construct from various studies (when compared to rigid control).

H1: There would be an association between body dissatisfaction and eating behaviors. More particularly, body dissatisfaction would be inversely related to intuitive eating and flexible control and positively related to rigid restriction, as it is already known that body dissatisfaction is a risk factor for the appearance of eating disorders and disordered eating.

H2: There would be an association between nutritional knowledge and body satisfaction. Better nutritional knowledge should be related to body satisfaction, if we refer to what seems to be working in the prevention programs (mentioned above); healthy body weight programs that include nutritional knowledge as part of their way to improve eating behaviors seem to have a positive effect on body image perception, decreasing body dissatisfaction.

H3: Nutritional knowledge would be positively associated with healthier eating behaviors. Those that have better nutritional knowledge would have healthier eating behaviors, meaning that they would demonstrate more intuitive eating and flexible control and less rigid control in their nutritional behavior.

H4: Nutritional knowledge and body satisfaction would both be predictors of healthy eating behaviors.

2. METHODS

2.1. STUDY DESIGN AND STUDY POPULATION

This is a descriptive, cross-sectional study in the form of an online survey, designed within the framework of the Master in Health Sciences (M.Sc.) of the University of Applied Sciences and Arts of Western Switzerland (HES-SO), in collaboration with the University of Lausanne (UNIL). The study was conducted between December 2017 and May 2019, while recruitment took place from August to September 2018. Included in the study were women of 20 to 35 years of age, who understand French, as all guestionnaires were in the French language. No BMI boundaries or exclusion criteria existed. However, as some women were recruited using the snowball sampling technique, initial participants were requested to avoid recruiting acquaintances within the Nutrition and Dietetics Department of the University. Recruitment methods included emails, posts on social media and instant messaging applications, means of communication that are used daily by women of that age group. The messages that were first diffused for the participation in the study were among the class of the University (that comprised of 35 students) and the researcher's circle of acquaintances, that consisted of both men and women and that were asked to recruit women that aged between 20-35 years and, if not related to the field of Nutrition and Dietetics, participate as well. These methods were used in order collect a sufficient sample, while at the same time maintaining anonymity and discretion for the participants.

Choosing this specific age group (no younger that 20 years and no older than 35 years) of young adult women was also made and facilitated by the following reasons. First of all, since recruitment was to be anonymous, women of this age were easy to be found online via social media and other networking applications, as they use them daily and even more than any other age group of women ("Global Facebook user age & gender distribution," 2018). At the same time, young adult women, compared to teenagers, can make more conscious food choices, as they are just starting being more independent in their life, probably do not live with their parents and have the opportunity (if desired) to explore nutrition and get to know the different nutritional values of food. Lastly, the bodies of the women of this particular age group (no older that 35 years) would be more likely to not have undergone any major changes due to childbirths, compared to older women (Eurostat, 2018).

2.2. DATA COLLECTION

Health data were collected anonymously through an online questionnaire, that had five question groups (five different sub-questionnaires). The questionnaire was created and filled

once on LimeSurvey ("Limesurvey GmbH. : An Open Source survey tool), a web server-based software, provided by the HES-SO. Nobody, including the persons collecting the data, was able to track the answers back to the participants or locate them. Prior to filling the questionnaire, women were informed of the purpose of the study, the anonymity of the survey and the time required to complete the questionnaire. An online consent was also obtained from all study participants at the beginning of the survey, a mandatory step that allowed the questionnaire to be initiated. The study was exempted by the Geneva Cantonal Research Ethics Committee from having to file a demand for approval, as its data were anonymous and could not be traced back to the participants. In total, 128 women gave their consent and started filling out the questionnaire that took approximately 20 minutes to complete. Participants who failed to reply to all questions were not included in the analysis. After exclusion of all incomplete questionnaires (n = 58), the final sample of participants comprised of 72 women.

2.2.1. Socio-Demographic Questionnaire

Participants were asked to provide basic demographic information that concerned their age, nationality, level of education, current employment status, the presence of children, their health status and the presence of any serious physical, psychological or major health problems.

2.2.2. The Eating Disorders Examination-Questionnaire (EDE-Q 6.0; (Fairburn & Beglin, 1994))

The EDE-Q is a self-reported questionnaire based on the EDE interview (Eating Disorder Examination, (Fairburn & Cooper, 1993)) and designed to assess eating disorder psychopathology. Many studies have shown that the EDE-Q measures the principal characteristics of eating disorders in clinical samples and in the community similarly to the EDE (Binford, Le Grange, & Jellar, 2005; Mond, Hay, Rodgers, Owen, & Beumont, 2004). The EDE-Q is comprised of 28 items; 22 items form four different subscales (restraint, eating, shape and weight concern), while the remaining evaluate the frequency of binge eating episodes and inappropriate compensatory behaviors. For the purposes of this study, only two subscales were used; the one that evaluates shape concern (SC, 8 items) and the other that evaluates weight concern (WC, 5 items). Both subscales share 1 item. Every subscale is rated with a 7-point Likert-type scale that ranges from 0 (no days) to 6 (every day) and evaluate shape and weight concern felt the month prior to the completion of the questionnaire. After completion, a mean score for every subscale is obtained, with scores of 4 or higher indicative of clinical range. For the appropriate interpretation of EDE-Q scores, normative data for female populations are available (Hilbert, de Zwaan, & Braehler, 2012; Luce, Crowther, & Pole, 2008).

The questionnaire was used in French and had previously been validated by Carrard et al. (2015). For the present study, Cronbach's alpha was 0.80 for the weight concern scale and 0.89 for the shape concern scale.

2.2.3. The Cognitive Restraint Scale (Westenhoefer et al., 1999)

This is the scale that was created by Westenhoefer, Stunkard and Pudel in 1999 and derived from the Eating Inventory (also called the Three-Factor Eating Questionnaire) of Stunkard and Messick (1985), the 51-item instrument that measured Cognitive Restraint, Disinhibition, and Hunger. This scale is the updated and validated version of the Cognitive Restraint scale that was created in 1991 by Westenhoefer. This improved version consists of the updated Rigid and Flexible Control subscale. The Rigid Control subscale is comprised of 16 items and the Flexible Control of 12 items, that measure rigid and flexible control respectively. In each subscale of this new Cognitive Restraint scale, every item receives one point if the response (in the form of true/false or reflecting frequency) is reflective of rigid or flexible control. At the end, the points for each subscale are summed up and a total score of 16 and 12 points respectively can be acquired. The scale's construct validity has been previously established (Westenhoefer et al., 1999). Part of these subscales (the short forms; RC7 and FC7) were previously translated and validated (Lluch, 1995). The rest of the questions (RC questions 8-16 and FC questions 8-12) were translated in French for the purposes of this study, using the procedure of forward and backward translation, with the help of a translator and the resources of the department of Nutrition and Dietetics. The translation however did not get validated. For the present study, Cronbach's alpha was 0.74 for the scale of flexible control and 0.69 for the one of rigid control.

2.2.4. The Intuitive Eating Scale-2 (IES-2; (Tylka & Kroon Van Diest, 2013))

This 23-item scale (IES-2) created by Tylka et al., is the updated and improved version of the original IES (Tylka, 2006) and contains 11 original and 12 added items. All together they form four different subscales for its four respective domains: i. The Unconditional Permission to Eat subscale (UPE, 6 items), ii. The Eating for Physical Rather than Emotional Reasons subscale (EPR, 8 items), iii. The Reliance on Hunger and Satiety Cues subscale (RHSC, 6 items) and lastly iv. The Body-Food Choice Congruence subscale (B-FCC, 3 items). The IES-2 assesses individuals' tendency to follow and trust their physical hunger and satiety cues when deciding when, what and how much to eat, always respecting the needs of their body. All items are rated along a five-point Likert scale, ranging from one (1, strongly disagree) to five (5, strongly agree) and are averaged. Higher scores reflect higher levels of intuitive eating. A score (from 1 to 5) for the whole scale can be obtained, as well as one (from 1 to 5) for each of the four

different subscales. The scale's construct validity has been previously established (Tylka & Kroon Van Diest, 2013) in both male and female populations, while its French version has been validated by Camilleri et al. (2015). In this study, Cronbach's alpha was calculated at 0.88.

2.2.5. The General Nutritional Knowledge Questionnaire – Revised Version (GNKQ-R; Revised And Validated Version: (Kliemann, Wardle, Johnson, & Croker, 2016))

The first version of the General Nutrition Knowledge Questionnaire (GNKQ) was developed in 1991 in the United Kingdom by Parmenter and Wardle (1999) and has since been widely used by the scientific community to assess nutritional knowledge and find potential associations between knowledge and parameters like level of education, gender, dietary intake and weight. It has been validated for the United Kingdom adult population, and also adapted and validated for other populations in Turkey, Australia and Portugal (Alsaffar, 2012; Ferro-Lebres, Moreira, & Ribeiro, 2014; Gillian A. Hendrie, Cox, & Coveney, 2008; Spendlove et al., 2012). Its revised version (GNKQ-R) was proposed due to discrepancies found between the original version and the UK and international nutritional guidelines. As a result, the revised version of the questionnaire was created and was recently validated (Kliemann et al., 2016).

The questionnaire is comprised of five sections that treat different nutritional subjects: dietary recommendations, sources of nutrients in food, knowledge of healthy food choices and associations between diet and ill-health. Its last section comprises of sociodemographic questions. As sections can be administered separately, for the purposes of this study, only the second (sources of nutrients in food) and third section (knowledge of healthy food choices) of the questionnaire were used. These sections consist of 23 thematic questions with a total of 48 responses and can evaluate general areas of nutritional knowledge. After completion, a total score (of 48 points), as well as the scores of each subscale (36 and 12 points respectively), will be calculated based on the correct answers that are provided by the creators of the questionnaire. Higher scores reflect higher levels of nutritional knowledge. In this study, Cronbach's alpha was 0.74 for the first section of the questionnaire and 0.55 for the second one. The French version of the questionnaire was obtained using again a forward and backward translation procedure, with the help of a translator and the resources of the university's department of Nutrition and Dietetics. However, this translation, as well, did not get validated. Furthermore, the questionnaire was also adapted for a Swiss population, as some of the foods reported in some questions of the original version did not exist and were not representative of the Swiss eating habits. After completing all questionnaires, the participants were able to see the correct answers for the GNKQ as a "reward" for their participation.

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2.3. POWER ANALYSIS

A sample of approximatively 50 participants was estimated to be adequate enough in order to establish the presence or absence of statistical associations between the different variables whose pertinence was being questioned. A power analysis carried out with G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) showed that for regression analyses that involve three predictors (power of .80, alpha = 0.05, and medium effect size), 43 participants would be sufficient.

2.4. STATISTICAL ANALYSES

Means and standard deviations were calculated for all variables of the study. Their normality was tested using histograms, box plots and information on their skewness and kurtosis, allowing parametric analyses to be performed. Descriptive statistics were also calculated for the categorical variables of the study using proportions (%) and counts (n). Afterwards, Pearson correlations (2-tailed) were performed for the variables of age, BMI, shape and weight concern, eating behaviors (rigid control, flexible control and intuitive eating) and nutritional knowledge. On the last step of the statistical analyses, multiple linear regressions were performed, creating six regression models. As dependent variables were used the different eating behaviors and as independent ones, body dissatisfaction and nutritional knowledge. Both correlations and regression analyses were tested at a 5% significance level. All statistical analyses were performed using the STATA/IC 15.1 software.
3. RESULTS

3.1. DESCRIPTIVE STATISTICS

Characteristics of the study population are provided in **Table 1a** and **1b**. The mean age of the participants was 26 (SD = 3.2) years, while half of the women aged from 20 to 25 years. Their mean weight was 62.7 (SD = 9.5) kilograms (kg), while the majority of the women (70.8%, n = 51) were of normal weight. Only 14 of the 72 women (19.5%) were overweight or obese and 9.7% (n = 7) were underweight. Women lived either in Switzerland (94.4%, n = 68) or in France (5.6%, n = 4) and 80.5% (n = 58) of them were of Swiss nationality. Some of the other nationalities included were French, Italian and Portuguese.

	Mean (or N)	SD (or %)	Min	Мах
Age (years)	26	3.2	21	35
Weight <i>(kg)</i>	62.7	9.5	46.5	84.7
Highest weight <i>(kg)</i>	67.8	13.7	48	122
Height <i>(cm)</i>	166	6	157	182
BMI (kg/m²)	22.7	3.5	16.7	32.8
% Underweight (< 18.5 kg/m²)	7	9.7		
% Normal weight (18.5 – 24.9 kg/m²)	51	70.8		
% Overweight (25 – 29.9 kg/m²)	11	15.3		
% Obese (≥ 30 kg/m²)	3	4.2		
Nationalities				
% Swiss	43	59.7		
% French	6	8.4		
% Dual nationality (Swiss included)	14	19.4		
% Other	8	11.1		
% Multinational (Swiss included)	1	1.4		
Residency				
% Switzerland	68	94.4		
% France	4	5.6		

 Table 1a – Characteristics of study population (n = 72)

Note: Data are presented as means and SDs for continuous variables or as counts (N) and percentages for categorical variables.

Only two of the women had children and 77.8% (n = 56) had a higher education. Among all of the participants, half were employed (51.4%), one quarter were students (23.6%) and 13.9% were working while also being at school. Only six women were unemployed. Concerning any health issues, seven women had physical problems, three had psychological ones and five had major health problems.

	Ν	%
Children		
% Yes	2	2.8
% No	70	97.2
Education		
% Compulsory education	1	1.4
% Professional education	15	20.8
% University education or equivalent	56	77.8
Status		
% Students	17	23.6
% Employed	37	51.4
% Students and employed	10	13.9
% At home	0	0
% Maternity leave	0	0
% Sick leave	2	2.8
% Unemployed	6	8.3
Health problems		
% Physical problems	7	9.7
% Psychological problems	3	4.2
% Major health problems	5	6.7
% Physical and psychological problems	1	1.4
% Physical and major problems	1	1.4

Table 1b – Characteristics of study population (n = 72)

Note: Data are presented as counts (N) and percentages.

Table 2 provides participants' mean scores in the questionnaires concerning their body image perception (**EDE-Q 6.0**; (Fairburn & Beglin, 1994), their nutritional behavior (**Cognitive Restraint Scale**, (Westenhoefer et al., 1999) and **IES-2**; (Tylka & Kroon Van Diest, 2013)) and their nutritional knowledge (**GNKQ-R**; Revised and validated version: (Kliemann et al., 2016)).

	Score (mean)	SD	Range of possible scores	Min	Max
Weight concern (EDE-Q)	1.93	1.36	0 - 6	0	6
Shape concern (EDE-Q)	2.39	1.39	0 - 6	0	5.87
Rigid control (Cognitive Restraint Scale)	4.60	2.91	0 - 16	0	14
Flexible control (Cognitive Restraint Scale)	4.54	2.54	0 - 12	0	11
Intuitive Eating (total) (IES-2)	3.36	0.67	1 - 5	1.74	4.74
Unconditional Permission to Eat (Subscale 1, UPE)	3.82	0.70	1 - 5	2.17	5
Eating for Physical Rather than Emotional Reasons (Subscale 2, EPR)	3.02	1.12	1 - 5	1	5
Reliance on Hunger and Satiety Cues (Subscale 3, RHSC)	3.42	0.97	1 - 5	1.5	5
Body-Food Choice Congruence (Subscale 4, B-FCC)	3.20	0.96	1 - 5	1	5
Nutritional knowledge (total) (GNKQ-R)	64.4	11.8	0 - 100	42	92
Sources of Nutrients in Foods (Section 1)	60.6	13.12	0 - 100	31	92
Knowledge of Healthy Food Choices (Section 2)	76.1	15.4	0 - 100	42	100

Table 2 – Body dissatisfaction, eating behaviors and nutritional knowledge of participants (n = 72)

Note: Data are presented as means and SDs.

Regarding body dissatisfaction, the mean score of weight concern was 1.93 (\pm 1.36) and the one of shape concern was 2.39 (\pm 1.39), with the maximum possible score being 6 points and the cut-off point of clinical range being 4 points. These numbers meant that women had concern about their body and shape on average 6 to 12 days per month.

The different types of eating behavior were measured by the variables: rigid control, flexible control and intuitive eating. The mean score participants obtained was 4.60 (SD = 2.91) points for rigid control and 4.54 (SD = 2.54) points for flexible control. Concerning intuitive eating, the women had a mean score of 3.36 (SD = 0.67) points for the whole scale and also respective scores for each of its dimensions. The average score for the Unconditional Permission to Eat subscale (UPE) was 3.82 (SD = 0.70) points, indicating that the participants averagely agreed to this dimension. For the Eating for Physical Rather than Emotional Reasons subscale (EPR) the score was 3.02 (SD = 1.12), for the Reliance on Hunger and Satiety Cues subscale (RHSC)

3.42 (SD = 0.97), and lastly for the Body-Food Choice Congruence subscale (B-FCC) the score was 3.20 (0.96). All these last three scores indicate that the women took averagely a rather neutral position for these dimensions.

With regards to nutritional knowledge, the total score, as well as the one of the two subscales used, was converted to a scale of a 100 (as a percentage % of correct answers) for a more comprehensive interpretation of the results. The average percentage of correct answers for the whole questionnaire was 64.4% (SD = 11.8), while for the two different subscales (sources of nutrients in food and knowledge of healthy food choices), it was at 60.6% (SD = 13.12) and 76.1% (SD = 15.14) respectively.

3.2. CORRELATIONS BETWEEN BODY DISSATISFACTION, EATING BEHAVIORS & NUTRITIONAL KNOWLEDGE

After verifying the necessary criteria for every variable concerned, Pearson's bivariate correlations were performed for the variables of age, BMI, body image, nutritional behaviors and nutritional knowledge in order to assess their relationship. The results can be seen in **Table 3**.

To begin with, weight concern and shape concern had a strong positive correlation with rigid control and a moderate positive one with flexible control. Intuitive eating was found to be negatively correlated in a moderate way with weight and shape concern. However, looking into each different dimension (subscale) of intuitive eating, only three of them showcased a negative correlation with body image concern. Unconditional permission to eat (UPE, subscale 1), eating for physical rather than emotional reasons (EPR, subscale 2) and reliance on hunger and satiety cues (RHSC, subscale 3) were moderately negatively associated with weight and shape concern. Body-food choice congruence (B-FCC, subscale 4), on the contrary, did not showcase any statistically significant association with body image concern. These associations respond to and confirm the first hypothesis of the study (H1), that suggested that there would be an association between body dissatisfaction and eating behaviors. However, the association between flexible control and weight and shape concern proved to not have been the one suggested.

Concerning nutritional knowledge (in total, *NK*), there was no statistically significant association with any of the variables (age, BMI, weight concern, shape concern, rigid control, flexible control and intuitive eating). However, there was a moderate positive correlation between knowledge of healthy food choices (section 2 of the GNKQ-R questionnaire) and food-body choice congruence, the fourth dimension of intuitive eating.

Table 3 – Bivariate correlations of study variables (N = 72)

		Age	1	2	3	4	5	6	7	8	9	10	11	12	13
1. BMI	Pearson Correlation	.176	-												
	Sig. (2-tailed)	0.140	-												
2. WC	Pearson Correlation	.039	.392*	-											
	Sig. (2-tailed)	0.744	0.001	-											
3. SC	Pearson Correlation	.078	.240*	.838*	-										
	Sig. (2-tailed)	0.517	0.042	0.000	-										
4. RC	Pearson Correlation	.153	.124	.647*	.619*	-									
	Sig. (2-tailed)	0.201	0.230	0.000	0.000	-									
5. FC	Pearson Correlation	.103	031	.380*	.390*	.696*	-								
	Sig. (2-tailed)	0.388	0.793	0.001	0.001	0.000	-								
6. IE	Pearson Correlation	105	352*	455*	429*	406*	095	-							
	Sig. (2-tailed)	0.379	0.002	0.000	0.000	0.000	0.430	-							
7. IE_1	Pearson Correlation	181	153	496*	496*	616*	501*	.540*	-						
	Sig. (2-tailed)	0.129	0.198	0.000	0.000	0.000	0.000	0.000	-						
8. IE_2 FPR	Pearson Correlation	153	352*	299*	253*	199	.094	.820*	.205	-					
LIIX	Sig. (2-tailed)	0.200	0.002	0.011	0.032	0.094	0.435	0.000	0.084	-					
9. IE_3	Pearson Correlation	.030	231	353*	336*	314*	093	.792*	.435*	.391*	-				
NIGC	Sig. (2-tailed)	0.810	0.051	0.002	0.004	0.007	0.439	0.000	0.000	0.001	-				
10. IE_4 B-ECC	Pearson Correlation	.120	097	056	099	016	.124	.401*	097	.084	.353*	-			
D-1 00	Sig. (2-tailed)	0.314	0.419	0.638	0.409	0.896	0.299	0.001	0.417	0.122	0.002	-			
11. NK	Pearson Correlation	001	048	131	159	037	.022	.033	.129	065	.038	.116	-		
	Sig. (2-tailed)	0.991	0.686	0.272	0.182	0.761	0.854	0.781	0.280	0.585	0.751	0.331	-		
12. NK_1	Pearson Correlation	071	049	155	187	096	.009	.110	.200	.022	.092	.040	.953*	-	
	Sig. (2-tailed)	0.556	0.682	0.194	0.116	0.421	0.942	0.360	0.093	0.853	0.444	0.737	0.000	-	
13. NK_2	Pearson Correlation	.183	018	005	011	.135	.057	169	113	247*	111	.256*	.647*	.385*	-
	Sig. (2-tailed)	0.124	0.880	0.968	0.928	0.260	0.636	0.157	0.343	0.037	0.354	0.030	0.000	0.001	-

Note: Correlation is significant at the 0.05 level (2-tailed).

BMI = Body Mass Index, WC = Weight Concern, SC = Shape Concern, RC = Rigid Control, FC = Flexible Control, IE = Intuitive Eating, IE_1 UPE = Intuitive Eating subscale 1: Unconditional Permission to Eat, IE_2 EPR = Intuitive Eating subscale 2: Eating for Physical Rather than Emotional Reasons, IE_3 RHSC = Intuitive Eating subscale 3: Reliance on Hunger and Satiety Cues, IE_4 B-FCC = Intuitive Eating subscale 4: Body-Food Choice Congruence, NK = Nutritional Knowledge, NK_1 = Nutritional Knowledge (section 1: Sources of Nutrients in Foods), NK_2 = Nutritional Knowledge (section 2: Knowledge of Healthy Food Choices) Surprisingly, a negative, yet weak, association was found to exist between the same section of nutritional knowledge (knowledge of healthy food choices) and eating for physical rather than emotional reasons, the second dimension of intuitive eating (subscale 2 of the IES-2 questionnaire). The absence of relationship between nutritional knowledge and body dissatisfaction, rejects the second hypothesis of the study (H2: there would be an association between nutritional knowledge and body satisfaction), while the presence of association between one of the areas of nutritional knowledge with one of the dimensions of intuitive eating, partially confirms the third hypothesis of the study (H3: nutritional knowledge would be positively associated with healthier eating behaviors).

Naturally and as expected, there was a strong positive correlation between weight and shape concern. Moving on, BMI was found to be positively correlated with weight concern, and shape concern. Concerning eating behaviors, there was no statistically significant correlation between BMI and rigid and flexible control, whereas between BMI and intuitive eating a moderate negative association was found. Eating for physical rather than emotional reasons scale (of intuitive eating) was also found to be negatively associated with BMI.

Rigid control was strongly and positively correlated with flexible control, while at the same time, it was negatively correlated with intuitive eating. More particularly, a strong negative association was found between rigid control and unconditional permission to eat (dimension of intuitive eating), as well as a more moderate one with reliance on hunger and satiety cues (dimension of intuitive eating).

Concerning intuitive eating (general score) there was no statistically significant association with flexible control. However, a moderate negative association was found between unconditional permission to eat (dimension of intuitive eating) and flexible control.

Lastly, looking into the relationship between the different subscales of intuitive eating, not all of its dimensions were significantly correlated with each other. Unconditional permission to eat was not significantly correlated with eating for physical rather than emotional reasons and body-food choice congruence, while this last dimension was not significantly correlated with reliance on hunger and satiety cues.

3.3. REGRESSIONS

In order to test the fourth hypothesis of the study (H4: nutritional knowledge and body satisfaction would both be predictors of healthy eating behaviors), multiple linear regression

analyses were performed. As dependent variables were used the different types of eating behavior (rigid control, flexible control and intuitive eating) and as independent ones, shape and weight concern, along with nutritional knowledge.

Intuitive eating was represented from all of its four subscales, as two of them were found to be correlated with nutritional knowledge (**Table 3**), which was, in turn, represented from both scores of its respective scales (NK_1 and NK_2, rather than from the total score NK), as their bivariate correlation was weak.

Nutritional knowledge was included as an independent variable in every regression model, despite the fact that only one of its sections (Knowledge of Healthy Food Choices) showed to be correlated with two of the dependent variables (IE_2: Eating for Physical Rather Than Emotional Reasons and IE_4: Reliance on Hunger and Satiety Cues). This decision was made for theoretical reasons, in order to test our fourth hypothesis.

Moreover, due to the fact that shape and weight concern were highly correlated with one another (as seen in the bivariate correlation in **Table 3**), in order to avoid collinearity in the multiple linear regressions, a new variable was created by the mean score of these two scales ((weight + shape concern) / 2) and named *body dissatisfaction*. Furthermore, due to their weak correlation with the depending variables (rigid control, flexible control and the scales of intuitive eating), the variables of age and BMI were not used as independent variables for the regression analyses.

The results of all six models can be seen in Tables 4 – 9.

In the Model 1 (**Table 4**), a multiple regression was carried out to investigate whether body dissatisfaction and nutritional knowledge could significantly predict rigid control. The results of the regression indicated that the model explained 46% (Adjusted $R^2 = 0.43$) of the variance and that the model was a significant predictor of rigid control, F (3, 68) = 19.04, p < 0.001. While body dissatisfaction contributed significantly to the model, nutritional knowledge did not.

 Table 4 – Results of the multiple linear regression analysis for Rigid Control (Model 1)

Source	В	SE B	t	р
Body Dissatisfaction	1.45	0.20	7.19	0.000
Sources of Nutrients in Foods (NK_1)	-0.01	0.02	-0.40	0.693
Knowledge of Healthy Food Choices (NK_2)	0.03	0.02	1.60	0.115

In the second Model (**Table 5**), it was examined whether flexible control could be predicted by body dissatisfaction and nutritional knowledge. The model was a significant predictor of flexible control F (3, 68) = 4.61, p < 0.001, but explained only 16% (Adjusted $R^2 = 0.13$) of the variance. Again, only body dissatisfaction contributed significantly to the model, while nutritional knowledge did not.

Table 5 – Results of the multiple linear regression analysis for Flexible Control (Model 2)

Source	В	SE B	t	p
Body Dissatisfaction	0.80	0.21	3.68	0.000
Sources of Nutrients in Foods (NK_1)	0.01	0.02	0.57	0.568
Knowledge of Healthy Food Choices (NK_2)	0.01	0.02	0.28	0.784

Testing this time the different dimensions of intuitive eating (**Tables 6 – 9**), the Model 3 (**Table 6**) showed that when unconditional permission to eat (IE_1) was predicted, it was found that only body dissatisfaction was a significant predictor. The overall model fit was $R^2 = 0.31$ (Adjusted $R^2 = 0.28$), F (3, 68) = 10.17, p < 0.001.

Table 6 – Results of the multiple linear regression analysis for Intuitive Eating's Unconditional Permission to Eat (Model 3)

Source	В	SE B	t	р
Body Dissatisfaction	-0.26	0.05	-4.73	0.000
Sources of Nutrients in Foods (NK_1)	0.01	0.01	1.67	0.100
Knowledge of Healthy Food Choices (NK_2)	-0.01	0.00	-1.72	0.089

In the fourth Model (**Table 7**), it was, in turn, examined whether eating for physical rather than emotional reasons (IE_2) could be predicted by body dissatisfaction and nutritional knowledge. The results of this regression indicated that the model explained 15% (Adjusted $R^2 = 0.11$) of the variance and that the model was a significant predictor of eating for physical rather than emotional reasons, F (3, 68) = 4.00, p = 0.011. This time body dissatisfaction and knowledge of healthy food choices contributed significantly (yet in a different degree) to the model.

Table 7 – Results of the multiple linear regression analysis for Intuitive Eating's Eating for PhysicalRather Than Emotional Reasons (Model 4)

Source E	В	SE B	t	р

Body Dissatisfaction	-0.23	0.10	-2.42	0.018
Sources of Nutrients in Foods (NK_1)	0.01	0.01	0.66	0.514
Knowledge of Healthy Food Choices (NK_2)	-0.02	0.01	-2.31	0.024

On the regression concerning the prediction of reliance on hunger and satiety cues (IE_3) (Model 5, **Table 8**), it was found that only body dissatisfaction was a significant predictor. The overall model fit was $R^2 = 0.15$ (Adjusted $R^2 = 0.11$), F (3, 68) = 3.94, p = 0.001.

 Table 8 – Results of the multiple linear regression analysis for Intuitive Eating's Eating for Reliance on

 Hunger and Satiety Cues (Model 5)

Source	В	SE B	t	p
Body Dissatisfaction	-0.25	0.08	-3.02	0.004
Sources of Nutrients in Foods (NK_1)	0.01	0.01	0.70	0.486
Knowledge of Healthy Food Choices (NK_2)	-0.01	0.01	-1.21	0.230

The final linear regression concerning body-food choice congruence (IE_4), (Model 6, **Table 9**) showed that the model was not statistically significant in order to explain the variance of the variable in question, F(3, 68) = 1.91, p = 0.14.

 Table 9 – Results of the multiple linear regression analysis for Intuitive Body-Food Choice Congruence

 (Model 6)

Source	В	SE B	t	р
Body Dissatisfaction	-0.07	0.09	-0.80	0.428
Sources of Nutrients in Foods (NK_1)	-0.01	0.01	-0.68	0.497
Knowledge of Healthy Food Choices (NK_2)	0.02	0.01	2.28	0.026

4. DISCUSSION

The study explored the relationship between body dissatisfaction eating behaviors and nutritional knowledge. More particularly, it examined how nutritional knowledge is associated to different eating behaviors and body dissatisfaction in women of 20 to 35 year of age in a non-clinical environment. Among the four hypotheses that were tested, only the first was confirmed: body dissatisfaction was positively related to unhealthy eating behaviors (rigid control) and negatively related to healthy ones (intuitive eating). Furthermore, part of the third hypothesis was confirmed via the study's correlations: nutritional knowledge was positively related to healthier eating behaviors (body-food choice congruence), an association that was, however, not supported by the regression analyses. Moreover, no relationship was found between body satisfaction and nutritional knowledge, and lastly, only body satisfaction was a statistically significant predictor of healthy eating behaviors (intuitive eating) when tested along with nutritional knowledge.

It has to be noted that for the testing of the study's hypotheses, as healthy eating behaviors were considered both flexible control and intuitive eating. We would expect that they would be positively correlated with one another, but in fact no association was found between them, except for one negative between flexible control and unconditional permission to eat, a dimension of intuitive eating. In addition, the results of the study showed that only intuitive eating is related to positive health outcomes (lower BMI and lower body dissatisfaction), whereas flexible control acts similarly to rigid control, being strongly related to body dissatisfaction. These results are in accordance with the results of Tylka and Linardon (Linardon & Mitchell, 2017; Tylka et al., 2015) that performed the first two studies to ever compare all three eating behaviors (rigid control, flexible control and intuitive eating) together in the same sample in the community and suggest that intuitive eating is not conceptually the same construct as flexible control and that it is preferable to both rigid and flexible control, as it was found to be consistently related to and predict positive physical and psychological health outcomes. In the present study, although no association was found between BMI and flexible and rigid control, we found that flexible control is strongly correlated to rigid control, suggesting that these two constructs are not completely distinct from one another and hence justifying why flexible control is not connected to positive outcomes, as its adaptive properties might have not been able to be revealed, due to this strong overlap. This might be due to the way flexible control is measured, as the scale that Westenhoefer created comes originally from the Restraint Scale (C. P. Herman & Mack, 1975; C. Peter Herman & Polivy, 1975), a scale that measures restrained eating.

On the other hand, intuitive eating is a more adaptive and well-thought-out construct that is measured in a scale that was deliberately created for it. Intuitive eating also includes the notion of gentle nutrition to its construct, combining both measures of interoceptive awareness and nutrition principles and thus offering more valuable tools to those who follow it, in order to improve not only their relationship with food, but also make healthier food choices (Tribole & Resch, 2003). Therefore, the results of this study suggest, as well, that intuitive eating should be promoted for the adoption of healthy eating attitudes and behaviors and that it should be preferred not only to rigid control, but also to flexible control, whose utility should be questioned. However, the fact that nutritional knowledge was not proven to be a predictor of healthy eating behaviors in this study, does not make this suggestion any less valid, as knowledge is always a valuable tool for everyone. One positive association between knowledge of healthy food choices and body-food choice congruence was nevertheless found among the bivariate correlations of the current study.

Furthermore, looking at the BMI of the study's participants, we can see that 70% of the women have a BMI within the normal range. Participants' BMI was positively correlated with both weight and shape concern. However, its association with weight concern was slightly stronger than the one with shape concern (but still not equal to 1), showing that body dissatisfaction is even prevalent in women of normal or low BMI. Looking closer into this relationship and according to the literature, individuals with a higher BMI report higher levels of body dissatisfaction compared to normal-weight individuals (Weinberger, Kersting, Riedel-Heller, & Luck-Sikorski, 2017). Could, in turn, body dissatisfaction alone have an effect on BMI? The results of this study showed that those who are more body dissatisfied seem to have unhealthier eating behaviors (more rigid and flexible control and less intuitive eating), behaviors that could possibly result in a higher BMI, as it has been shown for young adults and overweight adolescents (Loth et al., 2015; Neumark-Sztainer et al., 2011). However, no such association was found between BMI, rigid and flexible control in the present study. On the other hand, those that are more body satisfied will be more likely to adopt healthier eating behaviors – in this case intuitive eating – a behavior that was shown to be related to a lower BMI. These assumptions are in accordance with Muennig, Jia, Lee and Lubetkin (2008) and seem to suggest, as well, that what seems to trigger the adoption of unhealthy eating behaviors (in other words being a health predictor) is body dissatisfaction and not BMI. This is something that is also confirmed for the study's regressions, where body dissatisfaction was a significant predictor for the adoption of rigid and flexible control. Moreover, it has to be noted that especially for the case of rigid control, its variance was explained by 45% by the presence of body dissatisfaction, a percentage that is rather big for health studies. In addition, the fact that no association was found between nutritional knowledge and body dissatisfaction, seems to

suggest that those who are dissatisfied with their body, will spontaneously adopt restrictive eating behaviors, no matter the amount of nutritional knowledge they might have and will likely not seek guidance from a dietitian in order to help them.

Focusing more on nutritional knowledge, among the study's results, an interesting and unexpected relationship was found between a dimension of intuitive eating and nutritional knowledge. More particularly, eating for physical rather than emotional reasons was inversely correlated with knowledge of healthy food choices, a relationship that was supported by the study's regressions as well, as knowledge of healthy food choices was found to significantly predict this eating behavior. This indicates that the more women eat for emotional reasons, the more they would turn to nutritional knowledge, in order to acquire the necessary tools to do differently and change their eating behavior. However, this does not suggest that they would actually change their eating attitudes and hence stop eating for emotional reasons. In order for someone to truly change his or her relationship with food, acquiring nutritional knowledge (even those that help as in making healthy food choices) is only one of the many means to achieve this change. Behavioral changes need to be made in combination as well.

Concerning the strengths of this study, it has to be noted that this is the first study that includes the evaluation of nutritional knowledge when simultaneously exploring the relationship of body dissatisfaction with rigid control, flexible control and intuitive eating. This study allows the domain of nutrition science to be included in the understanding of the complex phenomenon of eating behaviors and body issues, that has mainly been explored by psychological factors. Although the study did not reveal that nutritional knowledge relates significantly to body satisfaction, nor that it predicts the adoption of healthy eating behaviors, is was not proven to be unhelpful or disadvantageous. In addition, this study also showed that intuitive eating does not act in similar way to flexible control, supporting part of the findings of Tylka and Linardon. Furthermore, since recruitment was anonymous, the participants might have expressed in more judgement-free way their actual feelings about their body, as for most people, talking about their weight, figure and personal feelings might be intimidating and too personal.

However, the limitations of the present study should be noted as well. First of all, the sample consisted of only 72 women and was quite homogenous, as most of them lived in the same region (Romandy in Switzerland), were Swiss or French, didn't have any children and had a high education level, by either currently working or studying. This limits the generalizability of the results to the general population. In addition, the fact that some of the participants were recruited using the snowball sampling method, constitutes a potential sampling bias and margin of error, as the initial participants might have reached out to those with whom they

share a lot of traits and have a common background. Furthermore, that fact that every woman was recruited online indicates a possible selection bias, as this suggests that they had a higher education level and socio-economic status, that cannot be representative of the general population, because internet is not easily accessible to everyone. This can be confirmed from the fact that 77.8% of the women had followed a university education and the fact that their scores on the General Nutritional Knowledge Questionnaire (GNKQ-R) were above average (60.6% on the first section and 76.1% on the second section). Research has also shown that higher scores in the GNKQ are associated with gender, age, education level and socioeconomic status (Gillian Anne Hendrie, Coveney, & Cox, 2008; Parmenter, Waller, & Wardle, 2000). Another limitation of the study is the use of the translated French version of the General Nutrition Knowledge Questionnaire (GNKQ-Revised Version), that has not been validated, nor created for a Swiss population. Although some of the questions were adapted to fit some of the foods that are consumed in Switzerland, the questionnaire might have missed some typical Swiss food habits. These assumptions might also be confirmed from the poor internal consistency of the second section of the nutritional knowledge questionnaire (Knowledge of Health Food Choices, GNKQ-R), as its Cronbach's alpha was found to be 0.55. Furthermore, the answers to the questionnaires were self-reported, fact that may have influenced the accurate report of some data, such as weight, height, but also eating behaviors, whose selfreported perceptions can differ from the reality (Stice, Fisher, & Lowe, 2004). Lastly, the period in which the recruitment took place and the questionnaires were answered could constitute a possible bias, as summer months can provoke even more body dissatisfaction and unhealthy weight control behaviors to young women given that bikini season is on and women tend to wear lighter clothes due to heat.

It is important to acknowledge that the current study is a cross-sectional study, that cannot make conclusions regarding causal direction between nutritional knowledge, body dissatisfaction and most importantly eating behaviors. We can only conclude that certain variables were more or less related to others.

This study managed to discover a link between nutritional knowledge, eating behaviors and body dissatisfaction in women of 20 to 35 years of age in a non-clinical environment. Although it did not show that nutritional knowledge can predict the adoption of healthy eating behaviors, it showed that better knowledge of healthy food choices is associated (yet weakly) to emotional eating. This kind of relationship might be similar to the one women with eating disorders have, where they have been found to have quite good knowledge on calories and macronutrients in food, despite the fact that they suffer from eating disorders. This seems to suggest that nutritional knowledge alone is not a factor that could decide or determine what type of eating

behaviors women will follow when they are dissatisfied with their body and that eating behaviors are a very complex construct.

Prevention programs who target eating disorders, unhealthy weight control behaviors and obesity should continue focusing on cognitive and behavioral changes of individuals with regards to food and their body, but also incorporate nutritional knowledge as part of their strategies, as we cannot ignore the fact that there have been programs that have successfully managed to address these issues (and even decrease body dissatisfaction) when including nutritional education to their strategies.

Addressing body dissatisfaction from a young age is of great importance, as these dysfunctional emotions seem to affect individuals gravely both physically and psychologically. Healthy relationships with food and our body need to be established from a young age, in order to set the foundations for later in life and avoid the appearance of unhealthy weight control behaviors. From the part of health professionals, nutritional education, along with body and size acceptance, need to be promoted and advocated in all settings and especially in schools, where prevention can take place by educating and forming children and adolescents on what is a balanced diet and a healthy relationship with food and our body. Intuitive eating (that also includes the component of gentle nutrition) could be considered as a means to promote healthy and mindful eating behaviors for people that are struggling with their body image.

5. CONCLUSION

In conclusion, the current study offers an insight into the complex relationship of eating behaviors and body dissatisfaction, being the first study to include nutritional knowledge when examining flexible control, rigid control and intuitive eating in a group of young women. It contributes to the research of body image issues in youth, highlighting its impact on eating behaviors of young women. However, longitudinal studies are needed in order to understand in a better way the patterns of eating behaviors across time. Moreover, it would be interesting for future studies to incorporate more diverse samples, from various educational and socioeconomic backgrounds if desired to study this type of relationship. Furthermore, future research could focus on why women who are dissatisfied with their body do not first seek professional nutritional advice and rather chose to adopt unhealthy eating behaviors. Future studies could, in addition, evaluate the sources these individuals consult (as well as their impact on them), and apparently trust, in order to adopt unhealthy and restrictive weight control behaviors when body dissatisfaction affects their well-being and self-image. Finally, nutritional education, along with the promotion of healthy eating behaviors, could be incorporated in children's regular education and be evaluated by a longitudinal intervention study, that could assess the impact of such an initiative on eating behaviors and body image of young adults.

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7. ANNEXES

"Connaissances nutritionnelles, comportement alimentaire et satisfaction corporelle chez les jeunes femmes."

Informations sur l'étude :

Les données sont récoltées de manière intraçable. Les réponses que vous donnez aux questions seront traitées de manière confidentielle et votre identité est anonyme pendant la réalisation du questionnaire et l'analyse de données. Ceci implique que, une fois que vous avez soumis le questionnaire, les données ne sont ni modifiables ni suppressibles. Les investigateurs sont les seules personnes qui auront accès aux données.

Prendre part à cette étude implique de remplir ce questionnaire en ligne qui dure environs 15 minutes. La participation à cette étude est volontaire et si vous ne vous sentez pas confortable à un moment donné, vous pouvez abandonner sans autre, ce qui signifie que vos données ne seront pas utilisées. En remplissant ce questionnaire, vous consentez à participer à l'étude.

Le but de cette étude est d'explorer les facteurs qui pourraient contribuer à l'adoption de comportements alimentaires problématiques chez les jeunes femmes, dans l'idée de développer ensuite des actions de prévention ciblées.

Ce questionnaire fait partie d'une étude réalisée dans le cadre du Master en Sciences de la Santé HES-SO/UNIL, qui a pour but d'explorer les connaissances nutritionnelles, le comportement alimentaire et l'image corporelle des jeunes femmes de 20-35 ans.

Consentement (obligatoire)

1) Merci de cliquer ci-dessous pour indiquer si vous êtes d'accord avec l'énoncé :

- Je comprends l'information fournie et j'ai lu l'explication sur le but, la durée et la nature de l'étude

2) Si vous acceptez de participer à l'étude, merci d'indiquer votre consentement en cliquant ci- dessous :

- Je consens à participer à cette étude

Cliquez sur suivant pour commencer !

Caractéristiques Sociodémographiques

- 1. Quel est votre âge?
- 2. Quelle est votre nationalité?
 - Si "Autre", indiquez votre pays d'origine.

Si vous êtes bi-national, indiquez "Autre" et notez vos deux nationalités dans les commentaires

Ο	Suisse

- O France
- O Italie
- O Espagne
- O Portugal
- O Autriche
- O Allemagne
- OAutre :
- 3. Dans quel pays habitez-vous ?
 - O Suisse
 - O France
 - O Italie
 - O Espagne
 - O Portugal
 - O Autriche
 - O Allemagne

OAutre :

- 4. Avez-vous des enfants ?
 - O Oui
 - O Non

5. Quelle est la formation la plus élevée que vous avez terminée ?

■École	primaire	uniquement			
■Cycle	uniqueme	nt, CEG en F	rance (collège d'ensei	gnement général) ou	équivalent
					🗆 2
■École primaire plus apprentissage non-certifié□3					
--					
■Cycle plus apprentissage non-certifié□4					
École primaire plus apprentissage certifié (CFC en Suisse, CAP en France ou					
équivalent)					
 Cycle plus apprentissage certifié (CFC en Suisse, CAP en France ou équivalent) 					
 Cycle plus diplôme d'étude du secondaire (École de culture générale, École de 					
commerce ou équivalent)					
commerce ou équivalent) □7 •Maturité (professionnelle, gymnasiale ou équivalent), baccalauréat □8					
 commerce ou équivalent)					
 commerce ou équivalent)					
commerce ou équivalent) □7 •Maturité (professionnelle, gymnasiale ou équivalent), baccalauréat □8 •Formation professionnelle supérieure : École supérieure, Brevet, « bac + 2 ou BTS brevet de technicien supérieur » en France ou équivalent □9 •Maîtrise professionnelle □10					
commerce ou équivalent) □7 •Maturité (professionnelle, gymnasiale ou équivalent), baccalauréat □8 •Formation professionnelle supérieure : École supérieure, Brevet, « bac + 2 ou BTS brevet de technicien supérieur » en France ou équivalent □9 •Maîtrise professionnelle □10 •Université, Haute École Spécialisée (HES), École polytechnique, « bac + 3 » en					

- 6. Quel est votre statut actuel ?
 - Ó Étudiante
 Ó En emploi
 Ó À la maison
 Ó Congé maternité
 Ó Congé maladie
 Ó Chômage

7. Avez-vous actuellement des problèmes de santé somatique ?

O Oui O Non

8. Avez-vous actuellement des problèmes de santé psychique ?

O Oui O Non

9. Au cours de votre vie avez-vous eu des problèmes de santé importants ?

O Oui O Non

Comportement alimentaire (EDE-Q)

Consignes :

Ce questionnaire s'intéresse au comportement alimentaire et cherche en particulier à décrire votre comportement au cours <u>du mois dernier</u>. Veuillez lire chaque question attentivement et répondre à toutes les questions au mieux.

Pendant combien de jours durant les 28 jours passés…	Auc un jour	1-5 jours	6-12 jours	13- 15 jours	16- 22 jours	23- 27 jours	Chaq ue jour
 Avez-vous eu fermement envie d'avoir un ventre <u>complètement</u> <u>plat</u> ? 	0	1	2	3	4	5	6
2. Est-ce que le fait de penser à votre silhouette ou à votre poids vous a beaucoup gênée pour vous concentrer sur les choses qui vous intéressent (par exemple, travailler, suivre une conversation, ou lire) ?	0	1	2	3	4	5	6
3. Avez-vous clairement eu peur d'une possible prise de poids ?	0	1	2	3	4	5	6
4. Vous êtes-vous sentie grosse ?	0	1	2	3	4	5	6
5. Avez-vous eu une forte envie de perdre du poids ?	0	1	2	3	4	5	6

Questions 6 à 12 : Veuillez entourer le chiffre approprié à droite. Rappelez-vous que les questions se réfèrent seulement aux quatre dernières semaines (28 jours).

Durant les 28 jours passés…	Pas du tout		Légèr- ement		Modé- rément		Forte- ment
6. Est-ce que votre <u>poids</u> a influencé	0	1	2	3	1	5	6
vous-même en tant que personne ?	0	I	2	5	4	5	0
7. Est-ce que votre <u>silhouette</u> a influencé l'opinion (jugement) que vous avez de	0	1	2	3	4	5	6
vous-même en tant que personne ?							
8. A quel point cela vous aurait-il contrariée si on vous avait demandé de vous peser une fois par semaine (pas plus ou moins souvent) pendant quatre semaines ?	0	1	2	3	4	5	6
 A quel point avez-vous été insatisfaite de votre <u>poids</u>? 	0	1	2	3	4	5	6
10. A quel point avez-vous été insatisfaite de votre <u>silhouette</u> ?	0	1	2	3	4	5	6

11. A quel point étiez-vous mal à l'aise à la vue de votre <u>corps</u> (par ex., voir votre silhouette dans le miroir, dans le reflet d'une vitrine de magasin, en train de vous déshabiller ou de prendre un bain ou une douche) ?	0	1	2	3	4	5	6
12. A quel point étiez-vous mal à l'aise du fait que <u>les autres</u> voient votre silhouette ou vos formes (par ex., dans des vestiaires communs, quand vous nagez, ou portez des habits serrés) ?	0	1	2	3	4	5	6

13. Quel est votre poids actuel ? (Veuillez, s'il vous plaît, estimer votre poids au mieux)

..... kg

14. Quelle est votre taille ? (Veuillez, s'il vous plaît, estimer votre taille au mieux.)

..... cm

15. Quel a été votre poids le plus élevé au cours de votre vie ? (Rappelez-vous au mieux)

..... kg

Connaissances Nutritionnelles (GNKQ-R)

Consignes :

Ce questionnaire évalue vos connaissances nutritionnelles. Veuillez lire chaque question attentivement et répondre à toutes les questions au mieux. Les experts classent les aliments dans des groupes. Nous aimerions savoir si vous êtes au courant des groupes d'aliments et des nutriments qu'ils contiennent. Les dernières questions concernent le choix des aliments. Si vous ne connaissez pas la réponse, cocher "Pas sûre" plutôt que de deviner.

P.S. Une fois que vous avez terminé, vous aurez la possibilité de voir les bonnes réponses à ce questionnaire.

Section 1: Les experts classent les aliments dans des groupes. Nous aimerions savoir si vous êtes au courant des groupes d'aliments et des nutriments qu'ils contiennent.

1. Pensez-vous que ces aliments et boissons ont généralement une teneur élevée ou faible en sucres ajoutés ? (cochez une case par aliment)

	Teneur élevée en sucres ajoutés	Faible teneur en sucres ajoutés	Pas sure
Sodas lights			
Yaourt nature			
Glace			
Ketchup			
Melon			

2. Pensez-vous que ces aliments ont généralement une teneur élevée ou faible en sel ? (cochez une case par aliment)

	Teneur élevée en sel	Faible teneur en sel	Pas sure
Céréales pour petit- déjeuner			
Légumes surgelés			
Pain			
Haricots blancs à la			
sauce tomate			
Viande rouge			
Soupe en boîte			

3. Pensez-vous que ces aliments ont généralement une teneur élevée ou faible en fibres? (cochez une case par aliment)

Teneur élevée en	Faible teneur en	Pas sure
fibres	fibres	

Avoine Banane Riz blanc Œufs Pomme de terre avec la peau Pâtes

4. Pensez-vous que ces aliments sont une bonne source de protéines ? (cochez une case par aliment)

	Bonne source de protéines	Pas une bonne source de protéines	Pas sure
Volaille			
Fromage			
Fruits Haricots blancs à la sauce tomate			
Beurre			
Noix			

5. Lequel des aliments suivants sont considérés comme des farineux pour les experts ? (cochez une case par aliment)

	Farineux	Pas farineux	Pas sure
Fromage			
Pâtes			
Pommes de terre			
Noix			
Bananes plantains			

6. Quel est le principal type de graisse présent dans chacun de ces aliments ? (cochez une case par aliment)

Graisses poly-	Graisses mono-	Graisses	Cholestérol	Pas sure
insaturatées	insaturées	saturées		

Huile d'olive Beurre Huile de tournesol Œufs 7. Lequel de ces aliments contient le plus d'acides gras trans ? (cochez une réponse)

Biscuits, cakes et pâtisseries Poissons Huile de colza Œufs Je ne sais pas

8. La teneur en calcium d'un verre de lait entier en comparaison d'un verre de lait écrémé est: (cochez une réponse)

À peu près la même Bien plus élevée Bien plus basse Je ne sais pas

9. Lequel des nutriments suivants a le plus de calories pour le même poids de nourriture (cochez une réponse)

Sucre Farineux Fibres Graisses Je ne sais pas

10. Par rapport aux aliments faiblement transformés, les aliments transformées sont : (cochez une réponse)

Plus élevés en calories Plus élevés en fibres Plus faibles en sel Je ne sais pas

Section 2: Les points suivants concernent le choix des aliments

1. Si une personne voulait acheter un yaourt au supermarché, lequel aurait le moins de sucre/édulcorant ? (cochez une réponse)

Yaourt écrémé 0% à la cerise Yaourt nature Yaourt crémeux aux fruits Je ne sais pas 2. Si une personne voulait une soupe dans un restaurant ou un café, quelle option serait la plus faible en graisses ? (cochez une réponse)

Soupe au risotto aux champignons (champignons, cèpes, riz arborio, beurre, crème, persil et poivre noire concassé)

Soupe épicée à la carotte et à la courge (carotte, courge musqué, patate douce, cumin, piments rouges, graines de coriandre et citron) Soupe au poulet et à la crème (poulet suisse, oignions, carottes, céleri, pommes de terre, ail, sauge, farine de blé, double crème) Je ne sais pas

3. Quel serait le choix le plus sain et le plus équilibré pour un repas au restaurant (cochez une réponse)

Dinde rôtie, purée de pommes de terre et légumes Bœuf, tranche de quiche et pommes de terre rôties Poisson et frites servis avec des pois et une sauce tartare Je ne sais pas

4. Quel serait le repas sandwich le plus sain et le plus équilibré ? (cochez une réponse)

Sandwich au jambon + fruit + muffin aux myrtilles + jus de fruits

Sandwich à la salade de thon+ fruit + yaourt écrémé + eau

Sandwich œufs salade + chips + yaourt écrémé + eau

Je ne sais pas

5. Lequel de ces aliments serait le choix le plus sain pour un dessert (cochez une réponse)

Sorbet aux baies Tarte aux pommes et aux mûres Cheesecake au citron Cake de carotte avec une garniture de serré à la crème Je ne sais pas

6. Laquelle de ces combinaisons de légumes dans une salade donnerait la plus grande variété de vitamines et d'antioxydants ? (cochez une réponse)

Laitue, poivrons verts et chou Brocoli, carottes et tomates Poivrons rouges, tomates et laitue

Je ne sais pas

7. Si une personne voulait diminuer la quantité de gras de son alimentation sans abandonner les frites, lequel des aliments suivants serait le meilleur choix? (cochez une réponse)

Frites épaisses

Frites fines

Frites ondulées

Je ne sais pas

8. Une façon saine d'ajouter de la saveur aux aliments sans ajouter de graisses ou de sel supplémentaire est d'ajouter : (cochez une réponse)

Lait de coco

Fines herbes

Sauce soja

Je ne sais pas

9. Laquelle des méthodes de cuisson suivantes nécessite l'ajout de matière grasse ? (cochez une réponse)

Faire griller

Cuire à la vapeur

Cuire au four

Faire sauter

Je ne sais pas

10. Les aliments allégés « Light » (ou aliments régime) sont toujours une bonne option du fait qu'ils sont pauvres en calories (cochez une réponse)

D'accord

Pas d'accord

Je ne sais pas

Les questions suivantes sont liées aux étiquettes des aliments :



11. En regardant le produit 1 et 2, lequel contient le plus de calories (kcal) par 100g (cochez une réponse)

Produit 1

Produit 2

Les 2 ont la même quantité

Je ne sais pas

12. En regardant le produit 1, quelles sont les sources de sucres dans la liste d'ingrédients? (cochez une réponse)

Sucre et sirop de malt

Sucre, fructose and lécithine

Sucre, fructose et sirop de malt

Je ne sais pas

Flexible Control (FC12)

Consignes :

Ce questionnaire évalue vos comportements alimentaires. Bien que certaines questions semblent similaires, elles sont en fait sensiblement différentes et permettront aux chercheurs de mieux comprendre votre comportement alimentaire. Veuillez choisir la réponse qui caractérise le mieux vos attitudes et vos comportements habituels:

- Une fois que j'ai mangé ma ration de calories, je parviens habituellement facilement à ne plus manger. (*Vrai – Faux*)
- Je me sers délibérément des petites portions pour pouvoir contrôler mon poids. (Vrai – Faux)
- Lorsque je suis au régime, si je mange quelque chose qui ne m'est pas autorisé, je mange volontairement moins pendant un certain temps pour me rattraper. (*Vrai – Faux*)
- Je me retiens volontairement de manger pendant les repas pour ne pas prendre de poids. (*Vrai – Faux*)
- 5. Je fais très attention aux changements de ma silhouette. (*Vrai Faux*)
- 6. A quel point êtes-vous conscient de ce que vous mangez ?
 - 1 Pas du tout 2 Légèrement 3 Moyennement 4 Extrêmement
- 7. Avez-vous tendance à manger délibérément moins que vous le voulez ?
 1 Pas du tout 2 Un peu 3 Moyennement 4 Beaucoup
- 8. Si un jour, je me mange un peu plus, je me rattrape le lendemain. (Vrai Faux)
- Je fais attention à ma silhouette, mais je continue d'apprécier une alimentation variée.
 (*Vrai Faux*)
- 10. Je préfère la nourriture allégée, qui ne fait pas grossir. (*Vrai Faux*)
- 11. Si je mange un peu plus pendant un repas, je me rattrape au repas suivant. (*Vrai Faux*)
- 12. Restreignez-vous délibérément votre consommation de nourriture pendant les repas même si vous aimeriez manger plus ? (*Toujours – Souvent – Peu souvent – Jamais*)

Rigid Control (RC16)

- 1. J'ai une assez bonne idée du nombre de calories contenues dans les aliments courants. (*Vrai Faux*)
- 2. Je compte délibérément les calories pour contrôler mon poids. (*Vrai Faux*)
- A quelle fréquence faites-vous un régime délibérément pour contrôler votre poids ?
 1 Rarement 2 Parfois 3 La plupart du temps 4 Toujours
- 4. Une variation de poids de 2.5 kg modifierait-elle votre façon de vivre ?
 1 Pas du tout
 2 Légèrement
 3 Moyennement
 4 Beaucoup
- 5. Le fait que vous vous sentiez coupable de trop manger vous aide-t-il à contrôler votre alimentation ?
 1 Jamais 2 Rarement 3 Souvent 4 Toujours
- 6. A quelle fréquence évitez-vous de stocker des aliments tentants ?

1 - Presque jamais 2 - Rarement 3 - La plupart du temps 4 - Presque toujours

- 7. Quand vous faites les courses, avez-vous tendance à acheter des aliments « basses calories » ?
 - 1 Pas du tout 2 Un peu 3 Moyennement 4 Beaucoup

8. Je mange des produits allégés, même si ce n'est pas très bon. (Vrai – Faux)

9. Suivre un régime serait pour moi une manière beaucoup trop ennuyeuse de perdre du poids. (*Vrai – Faux*)

10. Je préfèrerais sauter un repas plutôt que de m'arrêter de manger au milieu du repas. (*Vrai – Faux*)

11. J'oscille entre des périodes où je contrôle strictement mon alimentation et d'autres où je ne fais pas très d'attention à ce que je mange, ni à la quantité. (*Vrai – Faux*)

12. Il m'arrive de sauter des repas pour éviter de prendre du poids. (*Vrai – Faux*)

13. Par principe, j'évite certains aliments même si je les aime. (Vrai – Faux)

14. J'essaie de respecter un plan lorsque je perds du poids. (Vrai – Faux)

15. Sans plan nutritionnel, je ne saurais pas comment contrôler mon poids. (*Vrai – Faux*)

16. Le plus important pour moi pendant un régime est d'obtenir des succès rapides. (*Vrai – Faux*)

Intuitive Eating (IES-2)

Consignes :

Comme dans les questionnaires précédents, bien que certaines questions semblent similaires, elles sont en fait sensiblement différentes et permettront aux chercheurs de mieux caractériser de façon générale certains aspects de votre comportement alimentaire.

Veuillez choisir la réponse qui caractérise le mieux vos attitudes et vos comportements habituels en fonction de l'échelle suivante :

1 pas du tout d'accord 2 plutôt pas d'accord 3 ni d'accord, ni pas d'accord 4 plutôt d'accord 5 tout à fait d'accord

1. J'essaie d'éviter certains aliments riches en graisses, en glucides (sucres et féculents) ou en calories	1	2	3	4	5
2. J'ai des aliments interdits que je ne m'autorise pas à manger (Cette affirmation ne concerne pas les interdits alimentaires par convictions philosophiques ou religieuses)	1	2	3	4	5
3. Je m'en veux d'avoir mangé quelque chose de mauvais pour la santé	1	2	3	4	5
4. Si j'ai très envie d'un aliment en particulier, je m'autorise à le manger	1	2	3	4	5
5. Je m'autorise à manger les aliments dont j'ai envie sur le moment	1	2	3	4	5
6. Je NE suis PAS de règles alimentaires ou régimes qui me dictent quoi, quand et/ou en quelle quantité manger	1	2	3	4	5
7. Je me surprends à manger quand je suis sous le coup de l'émotion (ex : anxieuse, déprimée, triste), même quand je n'ai pas vraiment faim	1	2	3	4	5
8. Je me surprends à manger quand je me sens seule, même quand je n'ai pas vraiment faim	1	2	3	4	5
9. Je me sers de la nourriture pour m'aider à apaiser mes émotions négatives (ex : anxiété, tristesse)	1	2	3	4	5
10. Je me surprends à manger quand je suis stressée, même quand je n'ai pas vraiment faim	1	2	3	4	5
11. Je suis capable de gérer mes émotions négatives (ex : anxiété, tristesse) sans me tourner vers la nourriture pour me réconforter	1	2	3	4	5
12. Quand je m'ennuie, il NE m'arrive PAS de manger juste pour avoir quelque chose à faire	1	2	3	4	5
13. Quand je me sens seule, je NE me tourne PAS vers la nourriture pour me réconforter	1	2	3	4	5
14. Je trouve d'autres façons de gérer le stress et l'anxiété qu'en mangeant	1	2	3	4	5

15. Je fais confiance à mon corps pour qu'il me dise quand manger	1	2	3	4	5
16. Je fais confiance à mon corps pour qu'il me dise quoi manger	1	2	3	4	5
17. Je fais confiance à mon corps pour qu'il me dise quelle quantité manger	1	2	3	4	5
18. Je me fie à mes signaux de faim pour savoir quand manger	1	2	3	4	5
19. Je me fie à mes signaux de satiété (être rassasié) pour savoir quand arrêter de manger	1	2	3	4	5
20. Je fais confiance à mon corps pour qu'il me dise quand arrêter de manger	1	2	3	4	5
21. La plupart du temps, j'ai envie de manger des aliments nutritifs (riches en vitamines/minéraux et qui apportent de l'énergie)	1	2	3	4	5
22. Je mange surtout des aliments qui permettent à mon corps de bien fonctionner	1	2	3	4	5
23. Je mange surtout des aliments qui donnent à mon corps de l'énergie et de l'endurance	1	2	3	4	5

Avez-vous un commentaire que vous aimeriez ajouter concernant ce questionnaire ? Si oui c'est ici :

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