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# Developing a Questionnaire to Assess Young Adults' Motivation to Prepare Healthy Foods

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DEVELOPING A QUESTIONNAIRE TO ASSESS YOUNG ADULTS' MOTIVATION TO  
PREPARE HEALTHY FOODS

A Thesis

Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for the degree of  
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in

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by  
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## ABSTRACT

This study developed a questionnaire to estimate young adults' motivation to prepare healthy foods based on the psychological needs identified by the Self-Determination Theory. Participants (n=507; mean age 20.2±1.9 years; 63% female) were recruited to complete the questionnaire. Due to incomplete responses, data from 492 individuals were analyzed (63% female). Racial/ethnic representation was 360 (71%) Caucasian, 78 (15%) African American, 25 (5%) Hispanic/Latino, 41 (8%) other/mixed race, and 3 participants who did not indicate race/ethnicity. Participants were asked to indicate the extent to which they agreed or disagreed with 25 statements using a 5-point Likert scale. Statements evaluated the participants' intrinsic motivation and perceived competence to prepare healthy foods, perceived autonomy and autonomy support, and feelings of relatedness to peers. Data collected were analyzed using exploratory factor analysis (EFA), internal consistency reliability using Cronbach's alpha, and test-retest reliability. A KMO statistic of 0.89 indicated sufficient correlation among items. The EFA returned five factors that explained 56.5% of the variance. All items in the five factors were retained and each factor had acceptable internal consistency (Perceived Competence:  $\alpha = 0.93$ ; Intrinsic Motivation:  $\alpha = 0.87$ ; Autonomy Support:  $\alpha = 0.85$ ; Autonomy:  $\alpha = 0.78$ ; Relatedness:  $\alpha = 0.77$ ) and Pearson correlation coefficients indicated acceptable test-retest reliability and ranged from 0.66 to 0.79. The results from this preliminary study suggest that the Young Adult Motivation to Cook Questionnaire has the potential to evaluate the Self-Determination Theory constructs of intrinsic motivation, perceived competence, autonomy support, autonomy, and relatedness. Further testing is necessary to confirm the relationship among the variables and latent constructs and divergent and convergent validity.

## CHAPTER ONE: INTRODUCTION

Young adults who lack reinforcement of positive dietary habits and sufficient food preparation skills may be at an increased risk for excess weight gain, obesity, and future disease.<sup>1,2</sup> Inadequate food preparation skills may be a contributing factor to diminished diet quality due to greater consumption of fast food and convenience items.<sup>2,3</sup> These items tend to be high in saturated fatty acid and sodium, which can contribute to chronic disease.<sup>2,3</sup> Poor nutritional intake and diet quality in young adulthood can have lasting detrimental effects on weight status and long-term health behavior patterns.<sup>1,3,4</sup> The National Health and Nutrition Examination Survey (NHANES) 2011-2014 showed 36.5% of adults to be obese.<sup>5</sup> The prevalence of obesity among younger adults aged 20-39 was 32.3%.<sup>5</sup> To address the multifaceted epidemic of obesity as young adults age, a deeper understanding of potential contributing factors, including young adults' ability to prepare healthy foods, is needed.<sup>1-4, 6-7</sup>

Emerging adulthood is a critical stage of personal growth.<sup>3</sup> As young adults begin to experience more personal freedom and develop a sense of autonomy, they are also building important support systems with peers that influence their behaviors and decisions.<sup>4,7</sup> Behaviors learned during young adulthood tend to be formative, making it difficult to change them later on in life.<sup>8,9</sup> Identifying ways to improve health behaviors can be done using behavior change theories such as the Self-Determination Theory (SDT).<sup>10</sup> The SDT addresses issues young adults face such as personal development and the impact of the social environment on an individual's intrinsic motivation to adopt and perform tasks or behaviors.<sup>10,11</sup> Currently, there is no instrument which can assess intrinsic motivation to prepare healthy foods in young adults.

## **Purpose**

The purpose of this study was to modify and test a questionnaire that measures the SDT constructs of autonomy, autonomy support, relatedness, perceived competence, and intrinsic motivation to prepare healthy foods in a young adult population.

## **Objectives**

1. Develop a questionnaire to estimate young adults' sense of autonomy, autonomy support, relatedness, perceived competence, and intrinsic motivation to prepare healthy foods.
2. Establish face validity of the questionnaire.
3. Determine if items relate to the hypothesized constructs.
4. Determine if scores for autonomy, autonomy support, relatedness, perceived competence, and intrinsic motivation are internally consistent and repeatable.
5. Determine the test-retest reliability of young adults' scores for sense of autonomy, autonomy support, relatedness, and perceived competence.

## **Limitations**

- The participants were a convenience sample.
- Data were dependent on the truthfulness of subject response.
- The questionnaire responses may not be generalizable to other geographical locations or population groups.

## **Definitions**

- Healthy dietary choices: Choices that include foods that may provide vitamins, minerals, and other nutrient dense substances that may have positive health benefits.<sup>12</sup>
- Self-Determination Theory: A macrotheory of human motivation that identifies and addresses basic psychological needs for autonomy, competence, and relatedness.<sup>10,11</sup>

- Autonomy: The independence or freedom an individual experiences.<sup>10</sup>
- Competence: An individual's ability to do something successfully or efficiently.<sup>10</sup>
- Relatedness: Refers to how connected an individual is to others.<sup>10,11</sup>
- Intrinsic motivation: The internal drive to explore and master a topic solely for enjoyment.<sup>10,11</sup>
- Extrinsic motivation: Behaviors that are the least autonomously regulated and are performed to satisfy an outside demand or reward.<sup>10,11</sup>
  - Autonomous motivation is a function of intrinsic motivation where extrinsic factors are identified by the activity's perceived value.<sup>10</sup>
- External regulation: The extrinsically motivated behaviors that are least autonomous and are influenced by social pressures and rewards or punishments.<sup>11</sup>
- Introjected regulation: Behavior an individual performs to avoid self-punishment or to attain greater feelings of worth.<sup>11</sup>
- Controlled motivation: External regulation and introjected regulation can be combined to form a controlled motivation composite in which behaviors are both intrapersonally and interpersonally controlled.<sup>10,11</sup>



## **CHAPTER TWO: REVIEW OF LITERATURE**

### **Overweight and Obesity**

As adolescents transition into young adulthood, they begin to gain greater independence, form a self-identity, and establish new behaviors.<sup>3</sup> During this unique developmental stage, young adults have the opportunity to adopt lasting health behaviors that can potentially affect their likelihood or not of becoming overweight or obese later in life.<sup>1,3,6-8</sup> Overweight and obesity is a major public health concern with 36.5% of US adults 20 years of age and older classified as obese in 2011-2014.<sup>5</sup> Emerging adulthood may be a critical, yet overlooked, stage in life in regards to reducing the prevalence of obesity among this population.<sup>3,7</sup>

Young adults are at an age of particular concern, as they experience the greatest rate of weight gain of any other age group.<sup>9,13,14</sup> The Coronary Artery Risk Development in Young Adults study (CARDIA)<sup>13</sup> showed that young adults averaged a weight gain of 1 to 2 pounds per year over the course of 15 years. A decline in cardiovascular health as well as an increased incidence of metabolic disorders in middle-age were found to be associated with this weight gain.<sup>13,14</sup> Preventing this weight gain during young adulthood may be critical to improving long-term health outcomes and decreasing related comorbidities.<sup>14</sup>

National nutritional recommendations are consistently unmet by the majority of Americans.<sup>12,15-17</sup> Findings from other nationally representative data suggest that young adults 18-27 years are frequent consumers of fast foods, with reported consumption averaging 2-5 times per week.<sup>18</sup> This fast food consumption was also associated with increased weight gain in early adulthood;<sup>18</sup> however, fast food restaurants that primarily serve burgers and fries have been associated with higher risk for overweight and obesity than fast food restaurants that primarily

serve sub-sandwiches.<sup>19</sup> Thus, the type of fast food restaurant, rather than fast food consumption as a whole, may be a greater predictor of weight gain.<sup>19</sup>

Many factors can contribute to overweight and obesity. Consuming more calories than the body uses by following an unhealthy diet pattern and lack of regular physical activity can lead to excess weight gain.<sup>20</sup> An individual's environment can also influence weight status and encourage overweight and obesity. Some examples of environmental impacts that do not support healthy lifestyle habits include oversized food portions, lack of access to healthy foods, and lack of neighborhood sidewalks and safe places for physical activity.<sup>20</sup> Genetics and family history may also play a role in the development of obesity.<sup>20,21</sup> An individual's likelihood of being overweight appears to be greater if one or both parents are overweight or obese; however, families also tend to share food and physical activity habits.<sup>21</sup> Thus, most cases of obesity are likely due to complex interactions among genes and environmental factors that are not fully understood.<sup>20,21</sup>

### **Home Food Preparation**

Lack of food preparation skills may be related to poor eating habits and a diminished capacity to meet the dietary recommendations.<sup>2,22,23</sup> Associations between young adults' meal routines and practices, such as food preparation, and key dietary indicators, such as fruit and vegetable and fast food consumption have been examined. The meal practices found to be most strongly associated with healthier dietary patterns were those related to routinely preparing meals at home and preparing meals with vegetables. Conversely, the meal practices most strongly related to poorer dietary patterns included purchasing and consuming foods away from home.<sup>23</sup> Contextual characteristics of young adults' meal patterns are also likely to impact food choice, and should be considered when targeting food preparation interventions.<sup>23</sup>

The decreased trend in home food preparation<sup>24</sup> has been influenced by a general lack of food preparation knowledge, confidence,<sup>25</sup> and skills.<sup>1-3,6,9,14,18,23-25</sup> Byrd-Bredbenner et al.<sup>25</sup> assessed young adults (n=1,024), 17 to 28 years, for their food preparation knowledge and examined their confidence in food preparation abilities using a questionnaire. Five percent indicated that they never learned to cook.<sup>25</sup> An inverse correlation between confidence and increasing complexity of food preparation was reported. Additionally, confidence in preparing a certain food or meal paralleled having prepared that food or meal in the past.<sup>25</sup> The scores from the questionnaire used to examine the participants' food preparation knowledge indicated only 42% of the questions were answered correctly, suggesting low knowledge scores could indicate difficulty with understanding food preparation terms and instructions typically found in recipes and on food packages.<sup>25</sup>

A study conducted by Levy and Auld<sup>26</sup> examined if food preparation classes improved university students' knowledge, attitude, and behaviors toward cooking. Demonstration vs. hands-on cooking classes were compared using pre- and post-tests. At the time of the pre-test, more than 90% of the 65 participants indicated they knew how to cook, with 42% of the demonstration group and 21% of the intervention group reporting having previously taken a cooking class.<sup>26</sup> The respondents from both groups expressed positive attitudes about cooking and eating healthful foods, but reported neutral feelings regarding the difficulty of preparing healthy food prior to the treatment. Significant differences in attitudes were found for both groups when surveyed 3-months after the program. The hands-on intervention group showed the greatest increase in cooking enjoyment and recognizing the benefits of cooking and expressed the greatest confidence in culinary skills. The intervention group also reported eating away from home less frequently than the demonstration group, suggesting while cooking demonstrations

may be a reasonable way to reach larger audiences, cooking classes may be more effective when trying to increase food preparation behaviors and knowledge in young adults.<sup>26</sup>

A cross-sectional study that examined the diet quality and its associations with involvement in meal preparation and consumption of convenience food items in Australian young adults enrolled in an undergraduate nutrition course.<sup>27</sup> Food behaviors and dietary intake were assessed using a questionnaire that included a food frequency questionnaire. Participants' diet quality was then measured using the Dietary Guideline Index (DGI), which was designed to assess adherence to Australian dietary guidelines. They found that those who reported cooking meals at home had a higher DGI score, and therefore increased diet quality. Further, those who reported more frequent consumption of convenience meals had a lower DGI score and diminished diet quality. These findings suggested that improving young adults' cooking skills has the potential to improve diet quality.<sup>27</sup>

Establishing better food preparation skills and healthier dietary behaviors during young adulthood could be beneficial in reducing chronic disease risk and in forming lasting healthy habits across the lifespan.<sup>2,3</sup> Larson et al.<sup>2</sup> found that young adults who reported more frequent involvement in food preparation consumed fast food less often and were more likely to eat diets higher in essential nutrients and of greater quality. They also found differences in fruit and vegetable consumption between those who were highly engaged versus those who had low food preparation involvement. Of those who reported greater food preparation, 31% were consuming five servings of fruits or vegetables daily, compared to only 3% of those reporting low involvement. Males and females who practiced more consistent food preparation were more likely to meet the *Healthy People 2010* recommendations for calcium, fruits, and vegetables.<sup>2</sup>

Increased consumption of fast food and convenience items and decreased home food preparation by young adults<sup>2,3,23-27</sup> could be influenced by the developmental transition that occurs between adolescence and young adulthood.<sup>2,3,18</sup> For many, this transition is also associated with increased independence and greater responsibility for food attainment and preparation.<sup>18</sup> These factors, along with inadequate food preparation skills, may then lead young adults to purchase convenience items more frequently<sup>18</sup> and increase their risk for consuming poor quality diets.<sup>2,3</sup>

The development of closer relationships and more immediate social support systems during young adulthood has been shown to impact health behavior patterns and lifestyle characteristics.<sup>3,7</sup> Reinforcement of these skills and behaviors by peers and other adults also appeared to play a role in adoption of health related habits.<sup>1,2</sup> With respect to weight loss and exercise, close friends may be more powerful motivators than family members.<sup>28</sup> Young adult males and females were more likely to respond positively and adopt healthy behaviors when the respondents reported greater support by their peers.<sup>7</sup> That study suggested that social support for exercise and dietary habits could be associated with better adherence to healthy behaviors.<sup>7</sup>

Perceived barriers exist that inhibit young adults' engagement in home food preparation.<sup>29-31</sup> Lack of time, inadequate cooking equipment and space, inconvenience,<sup>29</sup> and lack of knowledge or skill to prepare foods<sup>29,30</sup> have been reported as barriers to home food preparation. Ease of access to, relative cost of, and personal taste preferences for fast food items have also been reported as barriers to home food preparation.<sup>31</sup> Additionally, difficulty in changing eating habits, cost of food, and lack of knowledge regarding the Dietary Guidelines for Americans and of health benefits have been identified as barriers.<sup>30</sup> Conversely, reported facilitators to home food preparation include cost-effectiveness, familiarity with cooking

techniques, and having a model in food preparation. Having time to shop, cook, and clean after meals has also been described as a facilitator.<sup>29</sup> Facilitators to meeting the dietary recommendations for fruit and vegetables reported by adults included availability and accessibility, variety, and affordability.<sup>30</sup> Other facilitators identified to support healthy eating behaviors include pride in being able to prepare foods<sup>30,31</sup> as well as support and role-modeling by family members.<sup>31</sup> Understanding these barriers and facilitators is necessary when considering interventions to increase individuals' capacity and motivation to prepare healthy foods more frequently.

### **Self-Determination Theory**

As individuals age, it becomes increasingly difficult to change positive behaviors and lifestyle characteristics adopted during young adulthood.<sup>8,9</sup> Intervening to establish long-term healthy behavior patterns during young adulthood could be beneficial for the incorporation of healthy lifestyle characteristics into an individual's identity.<sup>1,3</sup> An effective way of understanding behaviors and facilitating behavioral change is through the use of behavior change theories such as the SDT.<sup>10,11</sup>

The SDT is a macrotheory of human motivation that identifies and addresses basic psychological needs for autonomy, competence, and relatedness.<sup>10</sup> Autonomy is the independence or freedom an individual experiences, competence is an individual's ability to do something successfully or efficiently, and relatedness refers to how connected an individual is to others.<sup>10,11</sup> The degree to which these needs are met affects the type and strength of motivation in an individual, and is essential to social development and personal well-being.<sup>10,11</sup> According to the SDT, an individual is driven to experience a continuum of types of motivation, moving from controlled to autonomous motivation and eventually becoming more intrinsically motivated.<sup>10,11</sup>

Controlled motivation is considered to be externally regulated where behavior is influenced by social pressures and rewards or punishments, while autonomous motivation is a function of intrinsic motivation where extrinsic factors are identified by the activity's perceived value.<sup>10</sup> Individuals who are autonomously motivated will have ideally integrated a task's value into their sense of self, and therefore experience a self-endorsement of their actions. Conversely, those whose behaviors are influenced by controlled motivation experience greater internal regulation or introjected regulation, in which the behavior is driven by external factors such as approval and shame. While both types of motivation may result in behavior change, greater psychological health and performance outcomes have been seen in individuals more autonomously and intrinsically motivated.<sup>10</sup> Intrinsic motivation, which is the internal drive to explore and master a topic solely for enjoyment, appears to have the greatest and strongest potential to drive behavior and behavior change.<sup>10,11</sup>

The SDT proposes a continuum of motivation (Figure 1). At the far left of the spectrum exists amotivation, or the complete lack of intention to perform a task, which stems from not valuing the activity.<sup>11</sup> Intrinsic motivation exists at the far right of the continuum, with extrinsic motivation existing in between amotivation and intrinsic motivation.<sup>11</sup> Externally regulated behaviors vary in extent to which the regulation is autonomous. The extrinsically motivated behaviors that are the least autonomously regulated are termed externally regulated; these are only performed to satisfy an outside demand or reward. Another extrinsically motivated behavior is referred to as introjected regulation, in which an individual may perform or accept a behavior, but it has not been incorporated into their sense of self. A third type of extrinsic motivation results in more autonomous and valued behavior and is termed regulation through identification. The final and most autonomous form of extrinsic motivation is referred to as integrated

regulation. Integrated motivation shares many characteristics with intrinsic motivation, such as being fully valued and assimilated, but they are still done to achieve outcomes rather than for inherent enjoyment.<sup>11</sup>

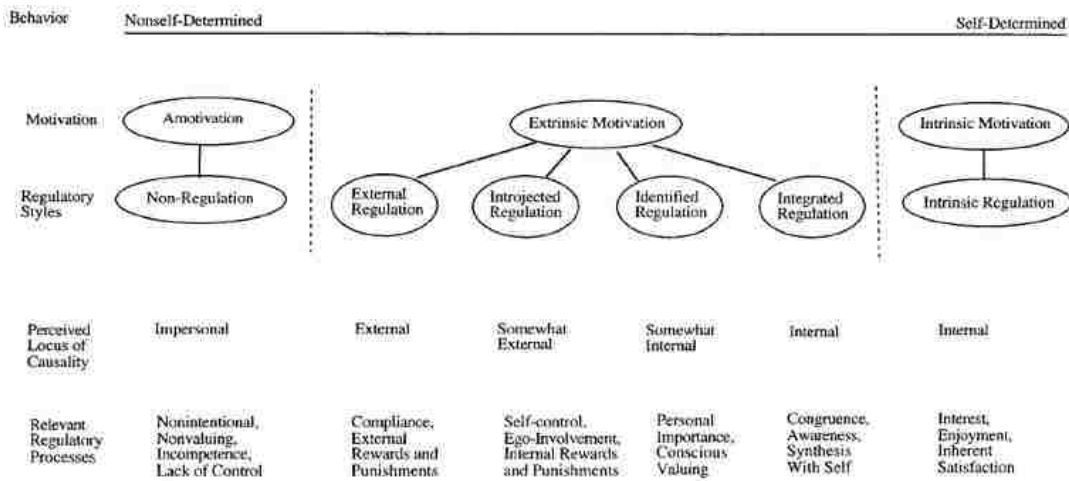


Figure 1. The Self-Determination Continuum Showing Types of Motivation With Their Regulatory Styles, Loci of Causality, and Corresponding Processes. Reprinted from “Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being,” by R. Ryan and E. Deci, 2000, *American Psychologist*, 55, p. 72. Copyright 2000 by the American Psychological Association. Reprinted with permission.

The Cognitive Evaluation Theory maintains that the needs for autonomy, competence, and relatedness are universal, and therefore does not focus on the varying strength of needs in an individual, but instead focuses on concepts resulting from the degree to which the needs have been met.<sup>10</sup> The energy to accomplish tasks comes directly or indirectly from these needs. The SDT suggests that this energy is what empowers individuals to act more autonomously and adopt new behaviors. If an individual experiences more controlled regulation, the energy will be depleted; whereas those more autonomously regulated will satisfy the basic needs and enhance the energy needed for self-regulation.<sup>10</sup>

Integrated regulation refers to behaviors individuals have transformed into personal values and by which they are intrinsically motivated.<sup>11</sup> Those who experience more self-



regulated behaviors have more interest, excitement, and confidence to perform a task.<sup>11</sup> This has been found when those who are intrinsically and externally motivated have the same level of perceived competence for a task.<sup>11</sup>

To maintain and enhance intrinsic motivation, supportive conditions are required.<sup>11</sup> Social and environmental factors that facilitate this motivation and satisfy the basic needs are important for the expression of intrinsic motivation in an individual.<sup>11</sup> Social-contextual events such as feedback, communication, and rewards during the performance of an action can increase perceived competence and enhance the intrinsic motivation to repeat that task.<sup>11</sup> Perceived competence can only accomplish this, however, when accompanied by a sense of autonomy. When an individual feels as though they have the ability to make a choice, and can acknowledge their feelings and self-direct their behavior, they experience a greater feeling of autonomy, which facilitates the inherent desire to engage in a behavior or action.<sup>11</sup> Students who have an autonomy supportive classroom environment experience greater intrinsic motivation and desire for a challenge. Conversely, students in a more controlled environment lose initiative to learn and learned less effectively.<sup>11</sup>

Relatedness, can also influence an individual's ability to become intrinsically motivated. The SDT hypothesizes that individuals who have a greater sense of security and belonging in their environment will be more likely to experience intrinsic motivation. While a feeling of closeness may not always be necessary to facilitate intrinsic motivation, a secure relational base is an important basic need for individuals to effectively adopt behaviors.<sup>11</sup>

Whether a family-based intervention founded on the SDT could enhance perceived parental support, perceived autonomous motivation, and overall quality of life in overweight and obese adolescents has been explored.<sup>32</sup> The 56 adolescents in that study were assessed at

baseline, pre-intervention, post-intervention, and at 3, 6, and 12 month follow-ups. A significant increase in the adolescents' perceptions of parental support in relation to physical activity and healthy eating behaviors was seen immediately after the intervention and remained increased at the 1-year follow-up. These results also indicated the intervention was successful at improving adolescents' autonomous motivation and quality of life, suggesting that the SDT could be effectively employed in future interventions targeting enhancing autonomous and intrinsic motivation to adopt healthier dietary behaviors.<sup>32</sup>

Eating behaviors are influenced by both autonomous and controlled regulation. Self-reported eating behaviors were compared to these forms of regulation using questionnaires in adults 17 to 50 years.<sup>33</sup> Autonomous regulation of eating was found to be positively associated with healthy eating behaviors whereas controlled regulation was negatively associated with healthy eating behaviors. The long-term adherence to healthier dietary patterns was assessed over a 26-week period in a population at risk for coronary artery disease. Self-determination for eating behaviors was found as a significant predictor of dietary behavior changes at 26 weeks. These measures were also related to improvements in weight and blood lipid parameters. These findings support the notion that successful regulation and engagement in healthier eating behaviors is more likely if the individual experiences greater autonomous and intrinsic motivation.<sup>33</sup>

Further, individuals may pursue intrinsic or extrinsic goals when regulating eating patterns, but those more intrinsically motivated to eat healthfully experienced better health and psychological outcomes than those who regulated their eating behaviors for external reasons.<sup>34</sup> Similar findings were shown in a that examined participants in a weight-loss program.<sup>36</sup> That study found autonomous eating regulation was related to increased fruit and vegetable

consumption, whereas controlled eating regulation had no associations with eating behaviors. Autonomous eating regulation was also positively associated with planning to eat healthy foods more frequently and predictive of engagement in healthy eating behaviors.<sup>36</sup> These studies suggested that increasing autonomously regulated motivation could be an important dynamic for promoting better dietary habits.

Intervention programs based on behavior change theories in general appear to be more successful at improving health behavior outcomes when compared to knowledge-based programs.<sup>37</sup> The SDT has been effectively employed as a basis for programs in many disciplines including healthcare, education, and athletics to address personality development and behavioral self-regulation.<sup>10,11</sup> While the SDT has not been extensively used in nutrition intervention programs or in development of questionnaires to detect changes in an individual's motivation to prepare healthy foods, it appears to offer a promising framework when addressing young adults.<sup>37-39</sup>

## **CHAPTER THREE: DEVELOPMENT OF THE YOUNG ADULT MOTIVATION TO COOK QUESTIONNAIRE USING EXPLORATORY FACTOR ANALYSIS**

### **Introduction**

National nutritional recommendations are consistently unmet by a majority of Americans.<sup>16,17,41</sup> Lack of food preparation knowledge and skills may influence eating habits and the capacity to consume healthful diets.<sup>2,22,23</sup> Greater confidence in the ability to cook is associated with increased home food preparation occasions<sup>2,23-26</sup> and greater consumption of fruit and vegetables<sup>2,23,24,42,43</sup> and higher quality diets.<sup>2,23-26,32,42</sup> Insufficient food preparation skills may contribute to increased consumption of fast food<sup>24,43</sup> and convenience items;<sup>24,25,43</sup> and such foods tend to be high in saturated fatty acids, sodium, and added sugars.<sup>2,26</sup>

Many young adults lack the knowledge, experience, and skills to prepare healthy foods.<sup>2,23,25</sup> Individuals with poor dietary habits and insufficient food preparation skills are more likely to consume away-from-home foods and have poorer quality diets.<sup>1,3</sup> Frequent consumption of convenience foods is associated with greater risk for excess weight gain, obesity, and future disease.<sup>44,45</sup> Yet, research examining young adults' motivation and competence to cook is limited.<sup>1-3,23,25</sup>

As young adults experience more personal growth and develop a sense of autonomy, they build important support systems with peers that influence their behaviors and decisions.<sup>4,7</sup> Behaviors learned during young adulthood tend to be formative and are difficult to change later in life.<sup>8,9</sup> Theories such as the Self-Determination Theory (SDT) can be used to identify ways to improve health behaviors.<sup>10</sup> The SDT is a macrotheory of human motivation that identifies and addresses basic psychological needs for autonomy, autonomy support, competence, and relatedness.<sup>10</sup> Autonomy refers to the independence an individual experiences, autonomy support

refers to an environment that fosters autonomous behavior, competence is an individual's ability to complete a task successfully, and relatedness refers to how connected an individual is to others.<sup>10,11</sup> According to the SDT, motivation to perform a task is achieved when these needs are adequately met.<sup>10,11</sup>

The purpose of the current study was to revise and test a questionnaire, titled Young Adults' Motivation to Cook Questionnaire (YAMCQ), which measured the SDT constructs of autonomy, autonomy support, relatedness, perceived competence, and intrinsic motivation to prepare healthy foods in a young adult population. Objectives included establishing face validity, determining if the items related to the hypothesized constructs, and determining the reliability of young adults' scores for the YAMCQ constructs.

## **Methods**

### Population Sample

The questionnaire was administered to a convenience sample of free-living undergraduate students (n=507) 18-30 years of age enrolled in public university classes in the southeastern United States. Subjects provided written consent prior to participating. The investigators administering the YAMCQ followed a standard protocol and advised the participants not to complete the survey if they were pregnant, older than 30 years of age, or younger than 18 years. All responses were kept secure and anonymous. The study was approved by the Louisiana State University Agricultural Center Institutional Review Board.

### Instrument Development

The YAMCQ consisted of 25 statements that represented the psychosocial constructs of the SDT and was adapted from an instrument previously validated with an adolescent population in grades 9-12.<sup>46</sup> The items examined young adults' intrinsic motivation and perceived

competence to prepare healthy foods, autonomy and autonomy support in the classroom, and relatedness with fellow students. Statements to assess intrinsic motivation, perceived competence, and relatedness were initially adapted by Miketinas et al.,<sup>46</sup> from the Intrinsic Motivation Inventory.<sup>47</sup> The autonomy support and autonomy statements were originally adapted by Miketinas et al.,<sup>46</sup> from the Learning Climate Questionnaire<sup>48</sup> and Weinstein and colleague's<sup>49</sup> index of autonomous functioning, respectively. In the development of the YAMCQ, four intrinsic motivation, one perceived competence, and one relatedness statements were reworded from the Miketinas et al.<sup>46</sup> survey to be more appropriate for a young adult population. Statements were reworded based on syllable count and clarity. For example, the original perceived competence statement was, "I think I am pretty good at preparing healthy food." The altered YAMCQ statement was, "I believe I am talented at preparing healthy food."

To establish face validity, the statements were reviewed and approved by a panel of nutrition experts familiar with the young adult population prior to distribution. Following questionnaire development, the YAMCQ was administered to a group of young adult university students (n=22). These students provided feedback regarding the appropriateness and their comprehension of the YAMCQ statements.

The questionnaire included the following number of statements representing the SDT constructs: five for intrinsic motivation, five for perceived competence, six for perceived autonomy support, five for relatedness, and four for autonomy. To reflect the 2010 Dietary Guidelines for Americans<sup>12</sup> recommendations and foods typically under-consumed by the American population, the following appeared on the questionnaire: "Fruits, vegetables, low-fat milk and milk products, and whole grains are considered healthy foods while foods high in sodium (salt), solid fats, and added sugars are considered less healthy."<sup>12</sup> Questions directed

participants to indicate the extent to which they agreed or disagreed with the questionnaire items using a 5-point Likert scale. Possible responses were: “Disagree a lot,” “Disagree,” “Neither agree/disagree,” “Agree,” and “Agree a lot.” The questionnaire was administered in person to students enrolled in university management (n=299), introductory nutrition courses (n=146), and mass communication (n=62). To determine the test-retest reliability of the young adults’ scores for the constructs, the YAMCQ was administered twice to the same students enrolled in a kinesiology (n=36) and an upper-level nutrition course (n=24). There was a 2-week interval between the test and retest administration of the survey.

### Data Analysis

Demographic information including age, race/ethnicity, and gender were collected along with the survey responses for the analyses. These data were analyzed using exploratory factor analysis EFA to identify the latent constructs of the survey responses. Internal consistency reliability was assessed using Cronbach’s alpha on each of the retained constructs. Responses to the questionnaire were subjected to principal axis factoring with promax rotation.<sup>50</sup> Item correlation was assessed using the KMO statistic and Bartlett’s test of sphericity. To ensure sampling adequacy, the KMO was expected to have a value greater than 0.6, and the Bartlett’s test was expected to have a significant *p*-value (<0.001).<sup>50</sup> The number of factors retained was determined through evaluation of eigenvalue criterion and scree plot point of inflection. The factor inclusion criterion was determined by using a minimum value of 1.0 extracted eigenvalues and by determining the number of factors above the point of inflection.<sup>51</sup> Individual items were retained if factor loadings on both the factor and structure matrices shared communalities greater than 0.4.<sup>51</sup> To determine test-retest reliability, Pearson’s *r* values correlation coefficient was expected to be greater than 0.6 for each of the constructs to be acceptable.<sup>52</sup> Cronbach’s alpha

was used to assess internal consistency reliability. All analyses were conducted using SPSS statistical software (IBM Corp. Released 2013. IBM SPSS Statistics for Windows. Version 22.0. Armonk, NY: IBM Corp.).

## Results

The YAMCQ was completed by 507 students. Due to incomplete responses, data from 492 individuals were analyzed (63% female). The participants' mean age was  $20.2 \pm 1.9$  years. The students' racial/ethnic representation was 360 (71%) Caucasians, 78 (15%) African Americans, 25 (5%) Hispanic/Latinos, and 41 (8%) from other/mixed race; 3 participants did not provide this information.

The analysis had a good sampling adequacy ( $KMO = 0.89$ ) and significant sphericity (Bartlett's Test  $p < 0.001$ ) suggesting sufficient correlation among items to permit factor analysis. The EFA returned five factors that explained 56.5% of the variance. The scree plot also indicated a five-factor solution. All items in the five factors were retained as all communalities shared were greater than 0.4 and had eigenvalues greater than 1.0 (intrinsic motivation = 7.0; perceived competence = 3.2; autonomy support = 1.8; relatedness = 1.2; autonomy = 1.0). Responses for statements representing each of the SDT constructs with communalities are shown in Table 1.

Table 1. Exploratory factor analysis pattern and structure matrices with communalities ( $h^2$ )

Items by Factor	Pattern Matrix	Communalities ( $h^2$ )	Structure Matrix
Factor 1: Perceived Competence			
I believe I am talented at preparing healthy food.	.80	.78	.87
I do pretty well preparing healthy food compared to other people my age.	.68	.68	.81
I feel pretty confident about my food preparation skills.	.87	.74	.85



(Table 1. continued)

Items by Factor	Pattern Matrix	Communalities (h <sup>2</sup> )	Structure Matrix
I am satisfied with my ability to prepare healthy foods.	.90	.75	.86
I am pretty skilled at preparing healthy food.	.94	.87	.93
Factor 2: Autonomy Support			
My instructor provides me with choices and options.	.59	.39	.61
I feel my instructor understands me.	.79	.55	.74
My instructor expresses confidence in my ability to do well in the course.	.67	.46	.67
My instructor encourages me to ask questions.	.47	.36	.57
My instructor listens to how I would like to do things.	.80	.65	.80
My instructor considers how I see things before suggesting a new way to do things.	.79	.65	.80
Factor 3: Intrinsic Motivation			
I enjoy preparing healthy food.	.80	.72	.84
I think it is satisfying to prepare healthy food.	.85	.61	.78
Preparing healthy food holds my attention well.	.79	.72	.84
I would describe preparing healthy food as very engaging.	.69	.60	.77
I understand the value of preparing healthy food.	.52	.32	.56
Factor 4: Relatedness			
I can trust my classmates.	.45	.25	.48
I would like a chance to interact with my classmates more often.	.73	.48	.68
It is likely that my classmates and I could become friends if we interacted a lot.	.70	.53	.72
I feel close to my classmates.	.52	.31	.54
I enjoy interacting with my classmates	.84	.69	.83
Factor 5: Autonomy			
If I had the choice, I would choose to take this class.	.40	.28	.50
I feel comfortable participating in class.	.67	.50	.70
I feel free to make my own decisions in class	.71	.51	.70
I feel free to express myself, my opinions, and my concerns in class.	.82	.64	.80

Statement mean scores ranged for each factor as follows: Factor 1 = 3.7 to 4.4; Factor 2 = 3.1 to 3.5; Factor 3 = 3.5 to 4.1; Factor 4 = 2.6 to 3.5; Factor 5 = 3.6 to 4.0. Each factor had acceptable internal consistency (Table 2). Mean factor scores and Cronbach's alpha are shown in Table 2.

Table 2. Factor Means and Reliability

Factor	Number of Items	Reliability <sup>a</sup>	<i>M</i> <sup>b</sup>	SD
F1: Perceived Competence	5	.94	3.3	.99
F2: Autonomy Support	6	.85	3.7	.59
F3: Intrinsic Motivation	5	.87	3.9	.67
F4: Relatedness	5	.78	3.3	.61
F5: Autonomy	4	.77	3.8	.62

The questionnaire had acceptable test-retest reliability (n=60). Correlations were as follows: Factor 1 (perceived competence) = 0.79; Factor 2 (autonomy support) = 0.69; Factor 3 (intrinsic motivation) = 0.79; Factor 4 (relatedness) = 0.69; Factor 5 (autonomy) = 0.66.

## Discussion

The purpose of the present study was to modify a questionnaire based on the SDT to estimate young adults' intrinsic motivation and perceived competence to prepare healthy foods, perceived autonomy and autonomy support and relatedness with peers in the classroom young adults. Results from this preliminary analysis suggest that the YAMCQ statements appear to represent the five SDT constructs.

To our knowledge, no instrument currently exists that can assess intrinsic motivation to prepare healthy foods in young adults. Having such an instrument would allow nutrition educators to evaluate participant status and change in motivation as a result of participating in culinary skills-building programs. A review of the literature indicates a lack of available instruments based on established theories that can estimate change in culinary behaviors. The majority of reported cooking interventions have been based on the Social Cognitive Theory

(SCT).<sup>4,10</sup> While the SDT and the SCT share many similarities, they are founded upon different constructs. The SCT has a greater focus on regulating external factors whereas the SDT is centered around intrinsic motivation as the basis for change. The SDT offers a promising archetype for understanding engagement in healthier dietary behaviors and, because of its focus on autonomy, appears to be particularly appropriate for use with young adults. The YAMCQ is unique as it appears to capture these SDT constructs relevant to the young adult population and appears capable of assessing an individual's motivation to prepare healthy foods.

This study has limitations and strengths. This study was limited by the fact that participants were students enrolled in a public university in the southeastern United States. Most students were Caucasian (71%) and female (63%), and therefore results may not be generalizable to more diverse populations or to populations with lower educational attainment. Findings are limited by the truthfulness of subject responses. Strengths of this study include the adequate sample size, acceptable internal structure, good internal consistency, and acceptable test-retest reliability of the instrument.

### **Implications for Research and Practice**

Future research is needed to confirm the factor structure and to establish convergent and divergent validity of the YAMCQ. After these validities are established, the YAMCQ could potentially be used in nutrition interventions targeting motivation to cook in young adults. While the SDT has not been extensively used as the foundation for nutrition intervention programs or in the development of questionnaires to detect changes in motivation to prepare healthy foods, it appears to offer a promising framework when helping young adults improve their health-related behaviors.<sup>34,39</sup>

## **CHAPTER FOUR: SUMMARY**

This study developed a questionnaire to estimate the SDT constructs of intrinsic motivation and perceived competence to prepare healthy foods, autonomy and autonomy support and relatedness among peers in young adults. The questionnaire statements appear to represent and estimate these constructs. The EFA returned five factors that explained 56.5% of the variance and indicated good internal consistency of the items. The questionnaire also indicated test-retest reliability.

Additional testing is needed to further validate the instrument. A confirmatory factor analysis needs to be conducted and convergent and divergent validity also need to be established. To test the instrument's convergent validity in young adults, intrinsic motivation and perceived competence to cook and perceived autonomy can be compared to successful engagement in food preparation behaviors. Additionally, if measurements of intrinsic motivation and perceived competence are low, it could mean the individual is not cooking, establishing divergent validity of the instrument. Establishing these validities would be useful for evaluating the questionnaire responses of how intrinsically motivated to prepare healthy foods young adults claim to be versus successful engagement in these behaviors. To measure convergent validity of relatedness, another measurement of support would be needed for comparison.

Upon additional testing and confirmatory analysis, this questionnaire has the potential to be a good indicator of intrinsic motivation and perceived competence to prepare healthy foods in young adults. The YAMCQ was based on an accepted behavior change theory and such interventions based on behavior change theories appear to be more successful at improving health behavior outcomes.<sup>37</sup> Once finalized, the YAMCQ could be used to evaluate the SDT constructs operationalized in a culinary skills-building nutrition intervention.

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## APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL AND REVIEW



LSU AgCenter Institutional Review Board (IRB)  
 Dr. Michael J. Keenan, Chair  
 School of Human Ecology  
 209 Knapp Hall  
 225-578-1708  
 mkeenana@agctr.lsu.edu

### Application for Exemption from Institutional Oversight

All research projects using living humans as subjects, or samples or data obtained from humans must be approved or exempted in advance by the LSU AgCenter IRB. This form helps the principal investigator determine if a project may be exempted, and is used to request an exemption.

- Applicant, please fill out the application in its entirety and include the completed application as well as parts A-E, listed below, when submitting to the LSU AgCenter IRB. Once the application is completed, please submit the original and one copy to the chair, Dr. Michael J. Keenan, in 209 Knapp Hall.
- A Complete Application Includes All of the Following:
  - (A) The original and a copy of this completed form and a copy of parts B through E.
  - (B) A brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts 1 & 2)
  - (C) Copies of all instruments and all recruitment material to be used.
    - If this proposal is part of a grant proposal, include a copy of the proposal.
  - (D) The consent form you will use in the study (see part 3 for more information)
  - (E) Beginning January 1, 2009: Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project, including students who are involved with testing and handling data, unless already on file with the LSU AgCenter IRB.  
 Training link: <http://www.fda.gov/oc/ohrt/training.htm>

1) Principal Investigator: Georgianna Tuuri Rank: Associate Professor Student? Y/N  
 Dept: Nutrition and Food Sciences Ph: 8-1722 E-mail: gtuuri@agcenter.lsu.edu

2) Co-Investigator(s): please include department, rank, phone and e-mail for each

- If student as principal or co-investigator(s), please identify and name supervising professor in this space

Ariana Bailey School of Nutrition and Food Sciences Graduate Student, 8-1722, [adelon3@lsu.edu](mailto:adelon3@lsu.edu)

3) Project Title: Validation of a Survey to Assess Young Adults' Motivation to Prepare and Consume Healthy Foods

4) Grant Proposal?(yes or no) No If Yes, Proposal Number and funding Agency \_\_\_\_\_

Also, if Yes, either: this application completely matches the scope of work in the grant Y/N

**OR**

more IRB applications will be filed later Y/N \_\_\_\_\_

5) Subject pool (e.g. Nutrition Students) Louisiana State University students 18-30 years of age

- Circle any "vulnerable populations" to be used: (children<18, the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted

6) PI signature Georgianna Tuuri \*\*Date 7/13/15 (no per signatures)

\*\*I certify that my responses are accurate and complete. If the project scope or design is later changed I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU AgCenter institutions in which the study is conducted. I also understand that it is my responsibility to maintain copies of all consent forms at the LSU AgCenter for three years after completion of the study. If I leave the LSU AgCenter before that time, the consent forms should be preserved in the Departmental Office.

Committee Action: Exempted  Not Exempted \_\_\_\_\_ IRB# HE15-12

Reviewer Michael Keenan Signature Michael Keenan Date 8-11-2015



LSU AgCenter Institutional Review Board (IRB)  
 Dr. Michael J. Keenan, Chair  
 School of Human Ecology  
 209 Knapp Hall  
 225-578-1708  
 mkeen@agctr.lsu.edu

**Application for Exemption from Institutional Oversight**

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 Training link: (<http://grants.nih.gov/grants/policy/hs/training.htm>)

1) Principal Investigator: Georgianna Tuuri Rank: Associate Professor Student? Y/N       
 Dept: Nutrition and Food Sciences Ph: 8-1722 E-mail: gtuuri@agcenter.lsu.edu

2) Co-Investigator(s): please include department, rank, phone and e-mail for each  
 • If student as principal or co-investigator(s), please identify and name supervising professor in this space

Ariana Bailey, School of Nutrition and Food Sciences, Graduate Student, 8-1722, [adelon3@lsu.edu](mailto:adelon3@lsu.edu)

3) Project Title: Validation of a Survey to Assess Young Adults' Motivation to Prepare and Consume Healthy Foods

4) Grant Proposal?(yes or no) No If Yes, Proposal Number and funding Agency                       
 Also, if Yes, either: this application completely matches the scope of work in the grant Y/N

**OR**  
 more IRB applications will be filed later Y/N     

5) Subject pool (e.g. Nutrition Students) Louisiana State University students 18-30 years of age  
 • Circle any "vulnerable populations" to be used: (children<18, the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted.

6) PI signature Georgianna Tuuri \*\*Date 7/13/15 (no per signatures)

**\*\*I certify that my responses are accurate and complete.** If the project scope or design is later changed I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU AgCenter institutions in which the study is conducted. I also understand that it is my responsibility to maintain copies of all consent forms at the LSU AgCenter for three years after completion of the study. If I leave the LSU AgCenter before that time the consent forms should be preserved in the Departmental Office.

Committee Action: Exempted      Not Exempted      IRB#                     

Reviewer                      Signature                      Date

**Part 1: Determination of “Research” and Potential for Risk**

- This section determines whether the project meets the Department of Health and Human Services (HSS) definition of research involving human subjects, and if not, whether it nevertheless presents more than “minimal risk” to human subjects that makes IRB review prudent and necessary.

**1. Is the project involving human subjects a systematic investigation, including research, development, testing, or evaluation, designed to develop and contribute to generalizable knowledge?**

(Note some instructional development and service programs will include a “research” component that may fall within HHS’ definition of human subject research)

**Yes**

**No**

**2. Does the project present physical, psychological, social or legal risks to the participants reasonably expected to exceed those risks normally experienced in daily life or in routine physical or psychological examination or testing?**

You must consider the consequences if individual data inadvertently become public.

**Yes Stop.** This research cannot be exempted—**submit application for full IRB review.**

**No Continue** to see if research can be exempted from IRB oversight.

**3. Are any of your subjects incarcerated?**

**Yes Stop.** This research cannot be exempted—**submit application for full IRB review.**

**No Continue** to see if research can be exempted from IRB oversight.

**4. Are you obtaining any health information from a health care provider that contains any of the identifiers listed below?**

A. Names

B. Address: street address, city, county, precinct, ZIP code, and their equivalent geocodes. Exception for ZIP codes: the initial three digits of the ZIP code may be used, if according to current publicly available data from the Bureau of the Census: (1) The geographic unit formed by combining all ZIP codes with the same three initial digits contains more than 20,000 people; and (2) the initial three digits of a ZIP code for all such geographic units containing 20,000 or fewer people is changed to ‘000.’ (Note: The 17 currently restricted 3-digit ZIP codes to be replaced with ‘000’ include: 036, 059, 063, 102, 203, 556, 692, 790, 821, 823, 830, 831, 878, 879, 884, 890, and 893.)

- C. Dates related to individuals
  - a. Birth date
  - b. Admission date
  - c. Discharge date
  - d. Date of death
  - e. And all ages over 89 and all elements of dates (including year) indicative of such age. Such ages and elements may be aggregated into a single category of age 90 or older
- D. Telephone numbers;
- E. Fax numbers;
- F. Electronic mail addresses;
- G. Social security numbers;
- H. Medical record numbers (including prescription numbers and clinical trial numbers);
- I. Health plan beneficiary numbers;
- J. Account numbers;
- K. Certificate/license numbers;
- L. Vehicle identifiers and serial numbers including license plate numbers;
- M. Device identifiers and serial numbers;
- N. Web Universal Resource Locators (URLs);
- O. Internet Protocol (IP) address numbers;
- P. Biometric identifiers, including finger and voice prints;
- Q. Full face photographic images and any comparable images;
- R. Any other unique identifying number, characteristic, or code; except a code used for re-identification purposes and;
- S. The facility does not have actual knowledge that the information could be used alone or in combination with other information to identify an individual who is the subject of the information

**Yes Stop.** This research cannot be exempted—**submit application for full IRB review.**

**No Continue** to see if research can be exempted from IRB oversight.

**Part 2: Exemption Criteria for Research Projects Can be found on the Next Page.**

**Part 2: Exemption Criteria for Research Projects**

Please select any and all categories that relate to your research. Research is exemptible when all research methods are one or more of the following five categories. Check statements that apply to your study:

-----  
 1. In education setting, research to evaluate normal educational practices.  
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2. For research not involving vulnerable people [prisoner, fetus, pregnancy, children, or mentally impaired]: that observes public behavior (including participatory observation), or with interviews or surveys or educational tests:

The research must also comply with ONE of the following:

a) The participants cannot be identified, directly or statistically;

or that

b) The responses/observations could not harm participants if made public;

or that

c) Federal statute(s) completely protect all participants' confidentiality.

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 3. For research not involving vulnerable people [prisoner, fetus, pregnancy, children, or mentally impaired]: that observes public behavior (including participatory observation), or with interviews or surveys or educational tests:

All respondents are elected, appointed, or candidates for public offices.

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 4. Uses only existing data , documents, records, or specimens properly obtained.

The research must also comply with ONE of the following:

a) Subjects cannot be identified in the research data directly or statistically, and no one can trace back from research data to identify a subject;

or that

b) The sources are publicly available

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\_\_\_\_\_ 5. Research or demonstration service/care programs, e.g. health care delivery.

The research must also comply with ALL of the following:

\_\_\_ a) It is directly conducted or approved by the head of a US Government department or agency;

and that

\_\_\_ b) It concerns only issues under usual administrative control (48 Fed Reg 9268-9), e.g. regulations, eligibility, services, or delivery systems;

and that

\_\_\_ c) Its research/evaluation methods are also exempt from IRB review.

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\_\_\_\_\_ 6. For research not involving vulnerable people [prisoner, fetus, pregnancy, or mentally impaired; Note that children can participate for an exempt study]: with food to evaluate quality, taste, or consumer acceptance.

The research must also comply with ONE of the following:

\_\_\_ a) The food has no additives;

or that

\_\_\_ b) The food is certified safe by the USDA, FDA or EPA.

**Part 3: Consent Form Information  
Can be Found on the Next Page.**

### Part 3: Information on Consent Forms

- The consent form must be written in non-technical language which can be understood by the subjects. It should be free of any exculpatory language through which the subject is made to waive, or appears to be made to waive any legal rights, including any release of the investigator(s), sponsor, institution or its agents from liability for negligence. (Note: the consent form is not a contract)
- For example consent forms, please refer to the LSU campus IRB website, <http://www.lsu.edu/irb/researchers.shtml>
- The LSU AgCenter IRB prefers using signed informed consent. However, if that is impractical, an application to waive signed consent can be requested below. When this waiver is requested, the **LSU AgCenter IRB must be provided with the consent script** that will present the information about consent to human subjects regarding the study/research. All consent forms or scripts must include a statement that the study was approved by the LSU AgCenter IRB and provide LSU AgCenter IRB contact information to participants: Dr. David Morrison at 225-578-4182. **Note: Parental consent usually cannot be waived for studies with children as subjects.**

#### I am requesting waiver of SIGNED Informed Consent because:

\_\_\_ (a) Having a participant sign the consent form would create the **principal risk** of participating in the study

#### or that

\_\_\_ (b) The research presents **no more than minimal risk** of harm to subjects and involves no procedures for which having signed consent is normally required outside of the research environment.

Now that your application is complete, please send two copies of it to the LSU AgCenter IRB for review, at the address listed below.



LSU AgCenter Institutional Review Board  
Dr. Michael J. Keenan, Chair  
209 Knapp Hall  
Baton Rouge, LA 70803  
Ph: 225-578-1708  
Fax: 225-578-4443  
E-mail: [mkeenan@agctr.lsu.edu](mailto:mkeenan@agctr.lsu.edu)

“Validation of a Questionnaire to Assess Young Adults’ Motivation to Prepare and Consume Healthy Foods”

Description:

The purpose of this study is to validate an instrument that assesses young adults’ motivation to prepare and consume healthy foods. The instrument is a questionnaire composed of four components: intrinsic motivation, perceived competence, autonomy, autonomy support and relatedness. The questionnaire will also include a food preference survey regarding willingness to consume whole grain foods and will allow researchers to estimate intentions to eat these items.

The subjects will be college students between 18 and 30 years of age. Students will provide written consent. The questionnaire will ask students their attitudes toward their teachers and peers. Confidentiality of the student responses will be maintained by the researchers; student responses will remain anonymous and will not be shared with their teachers. Researchers will collect the required consent forms and data for analysis. Statistical analysis will be performed to determine the validity of the instrument. After the instrument has been validated, it will be used to examine young adults’ intrinsic motivation and perceived competence to prepare healthy foods, autonomy, autonomy support, and relatedness and willingness to eat whole grain foods.



### Timeline and Locations for Collecting Data

The classes of interest are within Louisiana State University. The questionnaires will be administered to students during the 2015 fall semester after receiving the teachers' approvals and at the teachers' convenience. The students will be able to complete the questionnaires after the appropriate consent forms are completed. Researchers will administer the questionnaires to a variety of classes at various times. The approximate time for completing the questionnaire is ten to fifteen minutes.

**APPENDIX B:  
ADULT CONSENT TO TAKE A QUESTIONNAIRE**

APPROVED BY  
LSU AG CENTER  
IRB AS 15-12  
ON 8-11-2015

IRB# \_\_\_\_\_

**CONSENT TO TAKE A QUESTIONNAIRE**  
Adult Consent Form

We would like to better understand young adults' motivation to prepare and consume healthy foods. If you agree to help us, we will ask you to complete a questionnaire and food preference survey by filling in the appropriate circles for your responses. The questionnaire will take ten to fifteen minutes to complete. Your participation is voluntary, and there is no cost to you.

If you have any questions you can contact either one of the following investigators:

Georgianna Tuuri, PhD, LDN, RD  
Associate Professor,  
School of Nutrition and Food  
Sciences  
Phone: 225-578-1722

Ariana Bailey, BS  
Graduate Student,  
School of Nutrition and Food  
Sciences

Brittany Craft  
Undergraduate Researcher,  
School of Nutrition and Food  
Sciences

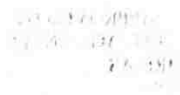
The questionnaire has been explained to me and all of my questions have been answered. I may direct additional questions regarding program specifics to the investigators. If I have questions about subjects' rights or other concerns, I can contact Dr. Phil H. Elzer, Associate Vice Chancellor & Associate Director, LSU AgCenter, (225) 578-4182. I consent to participate as described on the back of this page and acknowledge the investigators' obligation to provide me with a signed copy of this consent form.

Name: \_\_\_\_\_ (please print)

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Please provide us with your email address in case we need to contact you:

Email: \_\_\_\_\_



IRB# \_\_\_\_\_

**Description of the Study**

**Project Title:** "Validation of a Survey to Assess Young Adults' Motivation to Prepare and Consume Healthy Foods"

**Investigators:** The following investigators are available for questions, M-F 8:00 am-4:30 p.m.

Georgianna Tuuri, PhD, LDN, RD	Ariana D. Bailey, BS	Brittany Craft
Associate Professor	Graduate Student	Undergraduate Researcher
School of Nutrition and Food Sciences	School of Nutrition and Food Sciences	School of Nutrition and Food Sciences
Phone: 225-578-1722		

**Purpose of the Program:** To assess young adults' motivation to prepare and consume healthy foods.

**Inclusion Criteria:** Adults 18 to 30 years of age.

**Exclusion Criteria:** Children under 18 or adults older than 30 years of age.

**Description of the Program:** Before participating, adults 18 to 30 years of age will complete a consent form. After the appropriate, required form is completed, they will complete the questionnaire. The questionnaire will take approximately ten to fifteen minutes to complete.

**Benefit:** You will help researchers learn more about motivation to prepare and consume healthy foods.

**Risks:** There are no known risks involved.

**Right to Refuse:** Participation is voluntary. You may withdraw yourself from the program at any time.

**Privacy:** Survey results may be published, but no names or identifying information will be included for publication. A person's identity will remain confidential unless disclosure is required by law.

**Financial Information:** There is no cost to participate in this study.

## APPENDIX C: YOUNG ADULT MOTIVATION TO COOK QUESTIONNAIRE

### Motivation to Prepare and Consume Healthy Food

Fruits, vegetables, low-fat milk and milk products, and whole grains are considered healthy foods while foods high in sodium (salt), solid fats, and added sugars are considered less healthy.

**Instructions:** The following sentences refer to your overall experiences preparing healthy food. Using the 5-point scale below, please indicate the extent to which you agree with statements by completely filling in your response.

	<i>Disagree a lot</i>	<i>Disagree</i>	<i>Neither Agree/ Disagree</i>	<i>Agree</i>	<i>Agree a lot</i>
1. I enjoy preparing healthy food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I think it is satisfying to prepare healthy food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Preparing healthy food holds my attention well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I feel engaged when I am preparing healthy foods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I understand the value of preparing healthy food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I believe I am talented at preparing healthy food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I do pretty well preparing healthy food compared to other people my age.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I feel pretty confident about my food preparation skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I am satisfied with my ability to prepare healthy foods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I am pretty skilled at preparing healthy food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Instructions:** Please indicate how much you agree or disagree with the following statements about your overall experiences with the instructor in this class:

	<i>Disagree a lot</i>	<i>Disagree</i>	<i>Neither Agree/ Disagree</i>	<i>Agree</i>	<i>Agree a lot</i>
11. My instructor provides me with choices and options.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I feel my instructor understands me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. My instructor expresses confidence in my ability to do well in the course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. My instructor encourages me to ask questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. My instructor listens to how I would like to do things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. My instructor considers how I see things before suggesting a new way to do things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Instructions:** Please indicate how much you agree or disagree with the following statements about your overall experiences with your fellow classmates in this class:

	<i>Disagree a lot</i>	<i>Disagree</i>	<i>Neither Agree/ Disagree</i>	<i>Agree</i>	<i>Agree a lot</i>
17. I can trust my classmates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I would like a chance to interact with my classmates more often.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. It is likely that my classmates and I could become friends if we interacted a lot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I feel close to my classmates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I enjoy interacting with my classmates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Instructions:** Please indicate how much you agree with the following statements about your overall actions in this class:

	<i>Disagree a lot</i>	<i>Disagree</i>	<i>Neither Agree/ Disagree</i>	<i>Agree</i>	<i>Agree a lot</i>
22. If I had the choice, I would choose to take this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. I feel comfortable participating in class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. I feel free to make my own decisions in class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I feel free to express myself, my opinions, and my concerns in class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please check one of the following statements:**

- I am currently taking a cooking class.
- I have taken a cooking class before.
- I have never taken a cooking class.

## **VITA**

Ariana Bailey was born in Charleston, West Virginia. She graduated summa cum laude from Western Kentucky University, Bowling Green, where she received her Bachelor of Science degree in Hospitality Management and Dietetics in May of 2014. In August 2014, Ariana began the Master of Science program at Louisiana State University in the School of Nutrition and Food Sciences with a concentration in human nutrition. She is a member of the American Society for Nutrition.