

## The Effect of Personality Traits and Life Goals on Health Related Behaviour

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### Abstract:

The suggested study will examine whether life goal factors are related to healthy eating, and whether motivation for eating factors and personality factors are related to autonomous regulation. The study will use a multiple choice questionnaire comprising five different scales, personality (the Big Five), regulation (three factors), food choice (three factors expected), motivation for eating (nine factors), and life goals (six factors). Participants will comprise 237 students from Bangor University, aged between 18-30 years. They will be recruited by opportunity sampling. All participants who were approached agreed to take part in the study. It is expected that the only life goals that correlates with healthy eating will be altruism. The correlation should be positive. In the event of other life goals being significant correlates, it is still expected that altruism will be the most important predictor. Of the personality factors, conscientiousness is expected to correlate with autonomous regulation. Of the motives for eating, it is expected that health and weight will correlate with autonomous regulation. These three significant correlates are expected all to be positive. Although regression in itself cannot determine that correlations are causal, it is plausible, intuitive and from the literature, that such significant relationships, if found, suggest causal factors at work. In general, it is plausible that such findings apply to the aspect of healthy eating. Because of this, results of the proposed study should be of interest to those responsible for promoting public health through better nutrition.

**Keywords:** Personality Traits, Health Behavior

### Introduction:

There is growing awareness that health is a function, in part, of life-style. Many behaviours are associated with negative health outcomes. Examples include cigarette smoking (linked to lung cancer), lack of physical exercise (linked to cardiovascular disease, type II diabetes, and obesity), energy-rich but micronutrient-poor diets (also linked to type II diabetes and obesity), and sexual promiscuity, especially if accompanied with unprotected sex (associated with various sexually transmitted diseases). It is estimated that around 40% of US deaths are caused by such lifestyle

factors (e.g., Mokdad et al., 2004). Thus a problem facing health professionals lies in changing people's behaviours such that they adopt healthier life-styles.

## Basic concepts:

### Personality

Personality is defined as “enduring dispositions that cause characteristic patterns of interaction with one's environment” (Parks and Guay, 2009, p. 675). Thus, all things being equal, two people with different personalities will tend to respond in different ways when placed in similar environments. Such differences may pertain to healthy versus unhealthy behaviours. Eysenck (1991), for example, presents evidence that people who score highly on measures of extraversion are more likely to smoke cigarettes (and see, e.g., Kubicka et al., 2001). Thus it is an empirical fact that personality is a factor in determining people's healthy versus unhealthy behaviours. Thus one question centers on how one categorizes personality.

There is no consensus on this view. However, many argue that personality can be characterized by people's scores on the so-called Big Five dimensions (e.g., Goldberg, 1993; McCrae and Costa, 1997; Parks and Guay, 2009). These dimensions (or factors, or traits) are extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. These five factors, as Roberts and Robins (2000) argue, not only appear to be relatively consistent over an individual's life, to hold cross-culturally, and to reliably predict a range of outcomes (e.g., career, academic achievement, and divorce); they also benefit from the fact that, despite criticisms, no-one has yet developed a credible alternative to them.

The Big Five certainly seem to impact on risky behaviours. As indicated, extraversion is related to smoking. However, the relationship appears deeper. Clover and Bothwell (2001), for instance, found that recidivism among prison inmates was negatively correlated with conscientiousness—a finding that suggests that delinquents, in addition to being, on average, less intelligent than non-delinquents (e.g., Lounsbury et al., 2004), also tend to lead more haphazard lives. In other words, delinquents seem to be inconsistent. Clover and Bothwell's (2001) finding also suggests the possibility that people who score low in conscientiousness will tend to take less heed of health professionals' advice. In this regard, Bogg and Roberts. (2004; and see Tucker et al., 2006) report people with high conscientiousness scores tend to live longer. Low levels of conscientiousness appear also related to heavy episodes (binge drinking) of drinking alcohol (Kubicka et al., 2001).

There also appear links between emotional stability (sometimes termed neuroticism) and healthy versus unhealthy behaviours. This appears true, for example, of eating disorders: anorexic people tend to score more highly on measures of neuroticism (Bollen and Wojciechowski, 2004; Ghaderi and Scott, 2000). However, the major areas of health investigated by personality theorists appear to be smoking, drinking, and risky sexual behavior.

Alcohol consumption, like smoking, appears related to extraversion Kubicka et al. (2001) determined that overall amount of drinking alcohol (as opposed to binge drinking) was correlated to extraversion. Similarly, Hampson et al. (2006) found that intention to consume alcohol among children was correlated to sociability—a plausible correlate of extraversion. Risky sexual behavior appears related to sensation-seeking (e.g., Gullette and Lyons, 2005; Shafer, 2001). Sensation-seeking is akin to extraversion. Thus people who score highly on measures of extraversion appear more likely to engage in a range of unhealthy behaviours, from smoking cigarettes to having unprotected sex with strangers.

However, there are a number of problems with attributing a tendency to engage in risky behavior only to personality factors. First, at a trivial level, researchers use different measures to investigate the factors. As indicated, for instance, Gullette and Lyons (2005) related a propensity to engage in risky sexual activity to sensation-seeking, but to be consistent with the “Big Five view” they should have measured extraversion, not a mere correlate of it. More important, findings as regards the Big Five as regards healthy and unhealthy behaviours suggest subtle factors are at work.

Take, for example, smoking. As indicated, extraverts appear to smoke more than do non-extraverts. However, smoking also appears to be affected by openness, with smokers who perceive themselves as being more independent and original being less hooked on tobacco (Shadel et al., 2000). Smoking also appears affected by self-esteem, in that high extraversion scores tend to go alongside high self-esteem scores (Robins et al., 2001). Both self-esteem and independence are plausibly linked to self-efficacy—the personality characteristic associated with feelings of control over one’s life (Bandura, 1997)—a trait that would relate smoking behavior to self-determination theory (Ryan and Deci, 2000)—a theory that posits that individuals best exercise control over their behavior when they are intrinsically motivated to do so (see below).

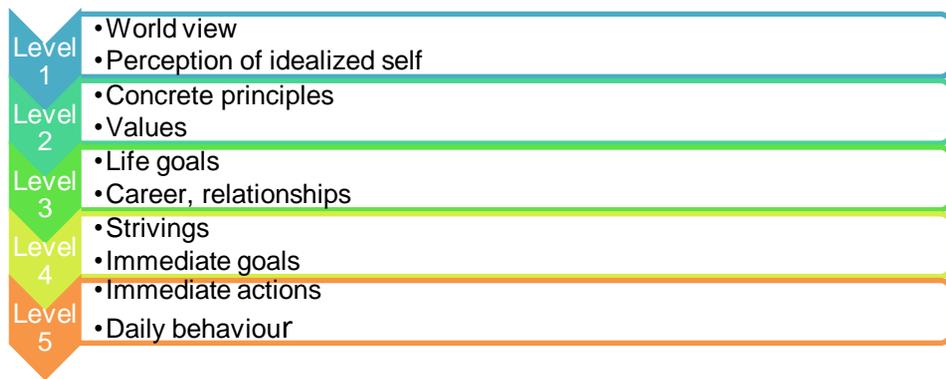
Such considerations point to two problems within the Big Five model of personality. First, several factors may impact on a given behavior. Thus there may be interaction effects between each of the five components of personality as regards healthy behaviours. Thus, for instance, smoking may be influenced both by extraversion and by openness. Second, the effect of each factor may be influenced by factors outside the Big Five factors. Thus, for instance, smoking may be influenced by feelings of self-efficacy independent of any effects of openness. Also, of course, each of these two mechanisms may operate simultaneously; so, for instance, smoking might be influenced by extraversion and openness, and these in turn may each be affected by self-efficacy. This leads to the problem of values.

## Values

Parks and Guay (2009) state that Gordon Allport, a pioneer of personality theory, recommended that personality theorists should exclude evaluative traits from their constructs. A possible reason for this is that personality types, in theory, should be cross-cultural. Thus societies throughout history and across region should present extraverts, conscientious people, non-extraverts, non-conscientious people, and so forth, irrespective of local customs and beliefs. Values, on the other hand, may be culture-specific. Thus, to give a few examples, traditional Bedouin societies place high value on family and tribal loyalty; Greeks in ancient Sparta placed high value on the martial arts, but had limited family values; and, today in Wall Street, financiers place high value on making themselves and the companies they represent large sums of money, but place little value on tribal loyalties or martial prowess. Values, no matter how deeply individuals may hold them, are in the long-term subject to change. Personality types, by contrast, are not.

### Life-goals

Major life goals may be defined, crudely, as being those things people want to “do with their lives”—have children, make much money, travel, become famous, write a novel, and so forth. Roberts et al. (2004) define them as “a person’s aspirations to shape his or her life context and establish general life structures such as having a career, a family, and a certain kind of lifestyle” (p. 542). Roberts et al. (2004) acknowledge, however, that life goals in a broad sense are more complex. They form a hierarchy. This is illustrated in Figure 1.



**Figure 1. Hierarchy of life goals. Adapted from Roberts et al. (2004)**

The important consideration is that such goals, as the figure suggests, form a logical hierarchy. Not only do lower level goals assume lower importance than higher level goals; the lower level goals are constrained by the higher level goals. Thus, for example, if an individual has a world view of a peaceful society, and an idealized self as being an artist, such a person would not accept a career in, for example, organized crime, no matter how well paid. As regards Roberts et al.'s (2004) analysis, major life goals pertain to Level 3 of the figure, and are divided into seven categories: economic, aesthetic, social, relationship, political, hedonistic, and religious. Note, however, that life goals differ from values in that values intrinsically possess a moral dimension whereas life goals, except insofar as they are subservient to values, are in themselves morally neutral (Ingledeu and Markland, 2009).

As indicated, Roberts et al.'s study reinforces the findings of Parks's meta-analysis (cited in Parks and Guan, 2009). Specifically, Roberts et al. (2004) determined that, in a sample of 298 college students, Roberts et al. (2004) found significant correlations between Big Five personality traits and life goals during the students first week at college.

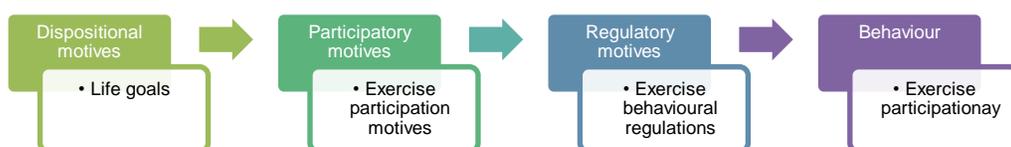
As indicated by the figure, neither conscientiousness nor neuroticism appeared affected by life goals, but both extraversion and openness to experience were highly affected, albeit in different ways. However, Roberts et al. (2004) also showed that life goals, and their relationships to Big Five factors, changed over the four years of the students' study. The table suggests that, after four years of study, the students' life goals impacted, to greater or lesser degree, on all Big Five personality traits. Roberts et al.'s (2004) results thus suggest that people change their life goals as they mature, and that, over time, such changes in life goals become more integrated with, and interact with, Big Five personality factors. This conclusion is supported by subsequent work by Bleidorm (2009), who found, in a study of 52 undergraduate psychology students, that life goals, current roles in life, and Big Five personality factors not only inter-relate, but also that Big Five personality factors vary within participants over time. Indeed, the reliability scores in Bleidorm's (2009) study of Big Five personality measures were higher for measures between participants than they were within them. This finding further suggests that the influence of personality on behavior may alter according to situational factors and to individual belief, aspiration, and value systems. This, again, suggests that health professionals may wish to consider personality and other factors when considering changing people's life-styles. Note, however, that different researchers use different measures of life goals. The so-called Aspirations Index (Kasser and Ryan, 1996), for instance, focuses on growth, relationships, community, wealth, fame, image, and health (and see Ingledeu et al., 2009). Life goals and health-related behavior

Life goals, as they relate to healthy behaviours, impact on self-determination theory (Ryan and Deci, 2000). Self-determination theory, as indicated, focuses on means of regulating behavior. Again as indicated, the theory distinguishes between intrinsic regulation and extrinsic regulation.

Intrinsic regulation pertain to regulation of behavior that arises from what individuals enjoy doing. Thus, for instance, those who enjoy physical exercise will tend to exercise simply because they derive pleasure from it. Extrinsic regulation, by contrast, is regulation of behavior that stems from factors other than the activity itself. Those who exercise, for instance, only because they will be punished if they do not, exercise through external regulation.

### The Ingledew, Markland, and Ferguson model

Ingledew et al. (2009) developed a model of determinants of exercise behaviour based on self-determination theory, specifically using earlier work by Deci and Ryan (2000). Note, however, that though it pertains to exercise behavior, it may be adapted for any other healthy behaviours. Figure 2 shows the model.



**Figure 2. Model of determinants of exercise behavior. From Ingledew et al. (2009).**

The first level motive—dispositional—pertain to life goals. These may be viewed as a function of personality and values. They may be intrinsic (e.g., forming relationships), extrinsic (e.g., seeking status), or a combination (e.g., health—feeling “good” but simultaneously avoiding disease).

Participatory motive pertain to the reasons individuals participate in exercise. These reasons may again be intrinsic (e.g., socializing, feeling fit), extrinsic (e.g., gaining social approval), or a mixture (e.g., improving health, avoiding disease).

Regulatory motives pertain to those factors that “enforce” compliance with the behavior. Again, they may be extrinsic or intrinsic. However, the distinction is not absolute. Rather, it forms a continuum, as shown in Figure 3.



**Figure 3. Continuum of regulatory motive. Adapted from Ingledew et al. (2009).**

External regulation pertains to when there is an immediate threat (e.g., punishment) for non-compliance or inducement (e.g., money) for compliance. Introjected regulation pertains to when the individual knows the threat or inducement, but it is not immediately present. Identified regulation pertains to when the individual perceives (albeit theoretically) the benefits of compliance. Integrated regulation pertains to when compliance falls naturally into the individual’s life goals and values. External and introjected regulation, therefore, tend to be extrinsic, and identified and integrated regulation tend to be intrinsic.

### Empirical findings of self-determination theory

In general, intrinsic motivation appears more effective in regulating behavior than extrinsic, especially as regards maintenance of healthy behaviours (see, e.g., Ingledew et al., 2009, for review). As regards Ingledew et al.’s (2009) model (Figures 2 and 3), the authors found, in a study of 251 young adults, that autonomous (i.e., intrinsic) regulatory motives were much more effective in maintaining long-term exercise behavior than were non-autonomous (i.e., extrinsic) motives.

The situation between life goals and participation, however, may be subtle. Ingledew et al. (2010), in a study of sun-exposure in 239 young adults that investigated both life goals and participatory motives for both sun-exposure and sun-protection, found that exposure was negatively associated with social pressure but positively associated with appearance and well-being. Protection was associated by health motives. The important finding of the study, however, was that participatory motives mediated the effects of life goals. By *mediation* (Baron and Kenny, 1986) here is meant that correlations that may “normally” be explained by one variable (in this case, between life goals and sun-exposure) are, in fact, explained by another variable (in this case, participatory motives). A similar mediating role of participatory motives on life goals as regards both sun-exposure and risky sexual activity was also reported by Aspen et al. (2010). Aspen et al. (2010) also found the dispositional factors (life goals) could give rise to different behaviours, and that different behaviours could satisfy single life goals, thereby complicating the situation further.

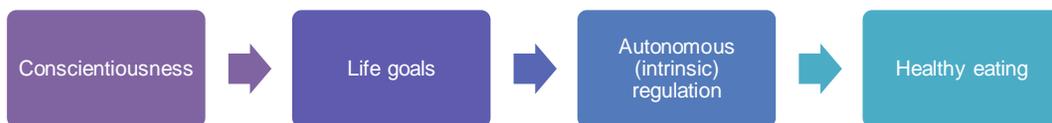
### Other complicating factors

There are further complicating factors. As indicated, research by, for example, Bleidorn (2009) suggests that personality is not as “invariant” as is sometimes supposed. In this regard, Ingledew and Ferguson (2007) found, in accordance with theory and common sense, that conscientiousness and agreeableness were associated with less tendency to engage in unsafe sex. However, the traits were mediated by autonomous though not controlled (i.e., extrinsic) motivation. The finding not only supports self-determination theory; it also suggests that self-determination theory impacts on “basic” traits. Similarly, Ingledew and Markland (2008) found, in a study of exercise behaviours, that intrinsic motivation was more effective in maintaining the behaviours, especially as regards people with high scores on measures of neuroticism. In this regard, Tucker et al. (2006) determined that people with high neuroticism scores respond negatively to social pressure to behave in a healthy manner.

### Summary and research proposal

- The evidence as reviewed above suggests the following:
- Healthy life-style is determined in part by personality factors.
- Healthy life-style is maintained more by intrinsic factors than by extrinsic factors.
- The effect of personality factors on health-related behaviours may be influenced by:
  - Life goals
  - Values
  - Manner of regulation (extrinsic or intrinsic) of the behaviours.

As regards the influence of such factors as life goals and manner of regulation on the effects of personality on health behaviour, mediation, as defined by Baron and Kenny (1986) appears important. It is also plausible that such general principles apply to all aspects of healthy life-style, not those described by the literature. They may equally apply, therefore, to eating behaviour. This gives rise to a model of healthy eating, as shown in Figure 4.



**Figure 4. Model of healthy eating.**

The model appears plausible first because it is similar to that proposed by Ingledew et al. (2009) (Figure 2), and second because empirically both conscientiousness and intrinsic regulation have been shown to impact positively on healthy behaviours. However, although, theoretically, life goals may affect intrinsic regulation, it is unclear which specific life goals are important; it is also

unclear which, if any, are relatively more important than others. The proposed research may therefore investigate the precise nature of the life goals (if any) that impact on intrinsic regulation of healthy eating.

## **Method**

### **Participants**

Participants will be 237 students attending Bangor University, North Wales. They will be of both genders. It is anticipated that most will be aged 18–30 years. No particular effort will be made to ensure gender of age groups are evenly matched. We will aim for 50:50 males : females by using a quota sampling method to ensure a non-probability sample by setting quotas on specific variables that will determine who will be chosen for the sample, which means that the sample won't consist of whoever or whatever is available. It is anticipated that the sample demographics will broadly reflect the demographics of the student population of Bangor University. Participants will be recruited by opportunity sampling. The researcher will approach students in communal areas of the university (e.g., libraries, cafe), and ask them to complete a questionnaire. No student will be compelled to do so, however. The students will be told, verbally, that the research is on motivational factors for food choices and eating behaviour. They will also receive a printed version of the instructions and request to participate (see Appendix 1). It is anticipated that participants will each require about 20 minutes to complete the questionnaire.

### **Design**

The research will be quantitative, it will be a survey rather than an experiment because we won't manipulate the independent variables and will use data from a questionnaire. This is because questionnaires are standard in this form of research (e.g., Ingledeew & Ferguson, 2007). There will be independent, dependent and mediating variables. There will be three researchers. Each will be a postgraduate (Master's Degree) student of Psychology at Bangor University.

### **Measures**

The questionnaire will include five measures, one to measure personality, one to measure life goals, one to measure the kind of food the participant eats (food choice), one to measure reasons for food choices (motivation for eating), and one to measure type of regulation.

#### **Personality**

This will be measured using the short form of the IPIP-NEO (International Personality Item Pool representation of the NEO PI-R™). This is a public domain personality inventory based on the original IPIP (Goldberg, 1999). The IPIP-NEO is a 120 item questionnaire, measuring the Big Five factors of personality: agreeableness, conscientiousness, openness, emotional stability, and extraversion. Each item may be answered using a 5-point Likert scale.

#### **Life goals**

These will be measured using the GOALS questionnaire (Pöhlmann & Brunstein, 1997). This is a 24 item questionnaire measuring six life goals: achievement, power, affiliation, diversity, altruism, and intimacy. Each item may be answered using a 5-point Likert scale.

#### **Eating behaviour**

This will be measured using a 15 item questionnaire asking for frequency (never to four or more times a day) of common food stuffs, ranging from healthy foods (e.g., fruit, green salad, vegetables) to unhealthy ((e.g., sweets, crisps and salty snacks, cakes). Six items in the questionnaire pertain to healthy foods, six to unhealthy foods, and three to neutral foods. Items are answered, in effect, by using an 8-point Likert scale.

#### **Motivation for eating**

This will be measured using the Food Choice Questionnaire (FCQ) (Stephoe & Pollard, 1995). This is a 36 item questionnaire measuring 9 reasons for food choice: health, mood,

convenience, sensory appeal, natural content, price, weight control, familiarity, and ethical concern. Each item may be answered by a 5-point Likert scale.

### **Regulation**

This will be measured using the diet section of the Treatment Self-Regulation Questionnaire (TSRQ) (Williams, Ryan, & Deci, 2008). This, as originally formulated, is a 15 item measure of autonomous regulation (6 items), controlled regulation (6 items), and amotivation (3 items). However, it is planned not to use the amotivation items. Thus the scale will comprise only 12 items. Of these, six measure identified regulation, two measure introjected regulation, and four measure external motivation. Each item may be answered using a 7-point Likert scale.

In addition, the questionnaire will ask for each participant's age and gender.

### **Statistical analyses**

The food choice questionnaire, unlike the other measures, has not been validated or shown to be reliable. Accordingly, factor analysis (principle component analysis) will be used to identify factors within it. Rotation will be varimax. It is anticipated that three factors will be identified: one for healthy foods, one for neutral foods, and one for unhealthy foods.

It is possible, however, that the factor analysis will not identify the neutral foods as being separate. If so, they will be added to whichever class of food the factor analysis identifies them as belonging to. In any event, determination of "healthy eating" will be made by inspection of the content of the principle factors. It is plausible, for instance, that they will comprise a single factor. These pertain to consuming pure fruit juice, fruit, green salad, carrots, peas, and other vegetables. People who consume these foods, presumably, are healthier than those who frequently consume biscuits, sweets, cakes, crisps, chips, and fizzy drinks (items 8, 9, 10, 13, 14, and 15). Exactly how many items the factor analysis will identify as "healthy" is uncertain, however, because potatoes, bread, and pulses (items 4, 11, and 12) are ambiguous (they appear "neutral": brown bread, for instance, is thought to be healthier than white bread; pulses may or may not come "packaged" with high levels of sugar (sugar is "unhealthy", but pulses are "healthy"; and potatoes may be consumed unpeeled ("healthy") or peeled and covered in butter (not so healthy). The factor analysis will provide some indication of validity. However, this will mainly be face validity. It will appear that the scale is measuring healthy eating. However, full determination of validity will require behavioural or other measures. Establishing this is being the scope of the proposed study.

Whatever items the factor analysis identifies as being indicative of healthy eating, their internal reliability will be checked using Cronbach's alpha. It is normal to set a criterion here of  $\alpha \geq .7$  (Field, 2009). However, for scales with few items, alpha tends to be low and for scales with large numbers of items alpha tends to be high (Field, 2009). Therefore, if the factor analysis identifies fewer than six items as healthy, an alpha level slightly below .7 will be deemed acceptable. Scores for each participant's healthy eating will be averaged (mean), as will all other measures.

Thereafter multiple regression breaking the model up, the analyses will be; life goals predicting motives; personality and motives predicting behaviour regulation; behaviour regulation predicting behaviour. Thus, that will be used to determine the relationship between life goals (the predictor variables) and healthy food choice (the dependent variable). Direct entry of predictor variables will be used. As indicated, there are six life goals. Normally, one should have 15 or more data entries for each predictor variable (Field, 2009). This suggests a minimum of 90 data entries for 6 predictor variables. The proposed 250 participants should therefore provide more than sufficient data for the regression.

A second multiple regression will be used to test the relationship between personality factors and eating motives (the predictor variables) and autonomous regulation (the dependent variable). The 5 personality factors and the 9 eating motives lead to 14 predictor variables. This

suggests, again using the 15 data entries per predictor variable guideline, a minimum of 210 data entries for the regression. Again, 250 participants will more than enough to provide this. Data from incomplete or spoiled questionnaires will not be used.

Other analyses will be descriptive, and will include means and standard deviations of eating behaviour of participants as grouped by age and gender. In addition, there will be tests of regression assumptions (linearity, homoskedasticity, outliers, independence of errors, normal distribution of residuals, and lack of co-linearity). In the event of serious violation of assumptions of linearity or normal distribution, data will be transformed. Serious violation, however, is not expected. All statistical analyses will be conducted using SPSS for Windows (Version 14 or later).

### Expected results

Table 1 shows expected results of the first multiple regression.

**Table 1. Expected results.**

Dependant variable	Independent variables (life goals)	Significance
Healthy food choices	Intimacy	Sig **
	Affiliation	
	Altruism	
	Power	
	Achievement	
	Diversity	

\*\* significant at  $p < .0$

The table shows that the only life goal expected to significantly correlate with healthy food choices will be altruism. The correlation is expected to be positive. The effect size of this will be determined, not by  $R^2$ , but by the partial correlation between altruism and healthy food choice (if the regression does not violate regression assumptions, this should be roughly the same as  $R^2$ ). In the event of two or more predictor variables being significant, the individual values of each partial correlation will be taken as its individual effect size (the total of them should roughly equal  $R^2$ ). The comparative contribution of each may also be gauged by inspecting the standardized slope of each (higher absolute slopes indicate greater effect size. It is expected that, if two or more predictor variables are significant, altruism will contribute the greatest effect size. We are interested in  $R^2$  (overall prediction) and B (specific to prediction).

Table 2 shows expected results for the second regression.

**Table 2. Expected results of the second regression.**

Dependent variable	Independent variable	Significance
Autonomous regulation	Neuroticism	
	Extraversion	
	Openness	
	Agreeableness	
	Conscientiousness	**
	Health	**
	Weight	**
	Mood	
	Convenience	
	Sensory appeal	
	Natural content	
	Price	
	Familiarity	
	Ethical concern	

\*\* =  $p < .01$

Of personality factors, only conscientiousness is expected to correlate with autonomous regulation. Of the food motives, only health and weight are expected to do so. All three significant correlations are expected to be positive.

Again, the individual contribution of each significant predictor will be determined by the value of the partial correlation with autonomous regulation of each. This may be corroborated by inspection of the value of the standardized slope of each.

## Ethical Issues

Ethics approval will be sought, prior to commencement of the research, from the Ethics Committee of Bangor University. A written form of the proposal will be submitted to the committee. Given that the proposed research is non-intrusive and ensures participant confidentiality, no problems are anticipated as regards ethical approval. To begin with, we should take into account the effects of the study on participants, and it was found that the research would cause no harm to the participants, either psychical or psychological. Moreover, the age, gender and ethnic background of the participants has been taken into account. However, this has no effect on the results. Also, the study will ensure no deception and will not hold any details or information that is related to the research. In addition, the questionnaire would include a consent form for the participant to sign, and a debrief explaining the nature and aim of the study at the end of the questionnaire; this would be in two versions: English and Welsh. The debrief would include, a suggested website link for general information and advice. Also, the researchers email and postal address, for feedback and inquiry that is related to the study. The study will ensure the right of every participant to withdraw from the research study at any time. Confidentiality is also ensured since anonymity is going to be preserved.

## Results:

**Table 1: Principal components**

	Component	
	Healthy	Unhealthy
100%fruit juices such as orange juice, apple juice, or grape juice (not counting fruit-flavoured drinks.)	.24	.42
Fruit (not counting juices)	.54	.05
Green salad	.74	.10
Potatoes (not counting chips, fried potatoes, or chips)	.64	.19
Carrots	.82	-.00
Peas	.76	-.02
Other vegetables (not counting salad, potatoes, carrots, or peas)	.72	-.11
Biscuits including savoury biscuits	.01	.78
Sweets or chocolate	-.07	.77
Cakes of all kinds	.06	.78
Bread or rolls	.02	.55
Pulses, such as baked beans, dried beans, and lentils	.61	.29
Crisps and salty snacks	.26	.63
Chips, including oven chips	.03	.56
Fizzy drinks, or soft drinks like squash, excluding diet or sugar free drinks	.03	.40

Note  $N = 236$

## Variance Explained =

Table 1 shows the Principal components analysis of the food frequency questionnaire. It suggests to consider two components of food choices (food frequency questionnaire). Some of the items show high loading  $> 0.4$  on the first component such as, fruit(.54), green salad(.74), potatoes(.64), carrots(.82), peas(.76), vegetables(.72) and pulses(.61) which tend to be viewed as a healthy food. Similarly, we can also see that biscuits(.78), sweets(.77), cakes(.78), crisps(.63), chips(.56) and fizzy drinks(.40) show high loading in the second component which is considered to be unhealthy component. However, it appears that bread or rolls item shows low score in the first component so, it functions as a less healthy item. Obviously, it would be suggest that we can ignore fruit juices item because it appears an ambiguous variance with the two components. Healthy and unhealthy eating scales were computed as the mean of the high loading items.

**Table 2, Descriptive Statistics**

	<i>M</i>	<i>SD</i>	Cronbach's Alpha
Intimacy	3.45	.61	.76
Affiliation	2.80	.83	.83
Altruism	3.21	.62	.75
Achievement	3.51	.58	.81
Power	2.45	.96	.85
Diversity	3.02	.80	.80
Neuroticism	2.85	.78	.70
Extraversion	3.31	.46	.71
Openness	3.38	.46	.69
Agreeableness	3.60	.53	.79
Consciousness	3.51	.54	.78
Convenience	2.70	.85	.82
Ethnicity	1.67	.98	.65
Familiarity	2.23	.93	.64
Health	2.70	.76	.80
Mood	2.51	.81	.81
Natural	2.49	.96	.80
Price	2.78	.98	.85
Sensory	2.93	.69	.67
Weight	2.46	1.10	.85
Autonomous	2.88	.78	.84
Controlled	1.51	.95	.84
Healthy	3.46	3.11	.80
Unhealthy	3.54	2.97	.74

Table 2 shows the mean, standard deviation and cronbach' alpha of each scales in our data set. First, means which created to summarize our data and give us the average values for the all variables. Thus, for example, we now know that the average number of intimacy is 3.45 and so on for the rest. Then, we can determine how much dispersion around the mean by looking at the standard deviation for all variables. Finally, the table shows cronbach's alpha scores which test the reliability of the scales. In the life goals scales, achievement has the highest mean 3.51 ( $SD = 0.58$ ). However, when it comes to neuroticism, the mean rating fell to 2.45 ( $SD = 0.96$ ). The Big Five shows that Agreeableness scored the highest mean 3.60 ( $SD = 0.53$ ) and Neuroticism scored the lowest mean 2.85 ( $SD = 0.78$ ). In Motives of Food Choice, Sensory has the highest mean 2.93 ( $SD = 0.69$ ). However, when it comes to Ethnical, the mean rating fell to 1.67 ( $SD = 0.98$ ). Also it shows that Autonomous regulation has the highest mean 2.88 ( $SD = .78$ ). however, Controlled regulation has a low mean's value 1.51( $SD = 0.95$ ). In addition, the table shows that Unhealthy food has higher mean 3.54( $SD = 2.97$ ) and healthy food scored lower mean 3.46 ( $SD = 3.11$ ).

Table 2 also reports reliability, which was verified by Cronbach's alpha for all scales. The values of the life goals were within the range of 0.75 (altruism) to 0.85 (power). In addition, the table shows the values of Cronbach's alpha for the Big Five ranged from .69 (openness) to .79 (agreeableness). In Motives of Food Choice, the values were within the range of .64 (Familiarity) to .85 (price). The value of Cronbach's alpha is the same for Autonomous and controlled regulation .84. Finally, the table shows the values of Cronbach's alpha for healthy and unhealthy food from .74 (unhealthy) to .80 (healthy).

**Table 3, Regression between behaviour regulation and food frequency**

	Healthy Beta( $R^2=$	Unhealthy Beta( $R^2=$
Autonomous	.14*	-.23**
Controlled	.11	-.01

Table 3 shows the results of a significant relationship between autonomous regulation and healthy eating at  $p <.05$ . Unhealthy eating appeared to associated negatively with autonomous regulation at  $p <.01$ . However, controlled regulation has not associated with healthy nor unhealthy eating.

The  $R^2$  value of the independent variable, autonomous regulation with healthy food was .14 which means that 14% of the variation in autonomous. However,  $R^2$  value of autonomous regulation with unhealthy food was -.23. Also,  $R^2$  reported 11% at controlled regulation with healthy food .

**Table 4: Regression between personality traits and eating motives(ID Vs)and behaviour regulation(D Vs)**

Independent variable	Autonomous $R^2(.46)$	Controlled $R^2(.43)$
	Beta	Beta
Neuroticism	.04	.16**
Extraversion	.15**	.08
Openness	.06	-.14*
Agreeableness	-.02	-.07
Consciousness	.13	-.09
Convenience	.09	-.01
Ethnical	-.01	.17**
Familiarity	-.05	.20***
Health	.38***	.09
Mood	.04	.18**
Natural	.21***	-.09
Price	-.01	.10
Sensory	.01	.01
Weight	.04	.16**

\* $p <.05$  \*\* $p <.01$  \*\*\* $p <.001$

This table provides the value of  $R^2$  for the two dependent variables. The value of  $R^2$  for the autonomous regulation as indicated by table 4 is .46, which tells us that the big five personality traits and eating motives can account for 46% of the variation in autonomous regulation. The next part of the table show  $R^2$  value of controlled regulation which is .43. The personality traits and eating motives explain 43% of the variance in controlled regulation. Neuroticism has a positive effect on controlled regulation. However, Openness has a significant negative effect on it at 5% level. Also, extraversion appeared to correlate positively with autonomous regulation at  $p < .01$ . Ethical, mood and weight appear to correlated positively with controlled regulation at  $p < .01$ . Furthermore, familiarity motivation has a high positive effect at  $p < .001$  on controlled regulation rather than autonomous regulation. It found also that health and natural have significant effects in autonomous regulation.

**Table 5: Regression between life goals and eating motives**

Independent variable	Convenience $R^2(.05)$ Beta	Ethical $(R^2.03)$ Beta	Familiarity $R^2(.08)$ Beta	Health $(R^2.19)$ Beta	Mood $(R^2.11)$ Beta	Natural $(R^2.12)$ Beta	Price $(R^2.10)$ Beta	Sensory $(R^2.09)$ Beta	Weight $(R^2.06)$ Beta
Intimacy	.19	-.01	.02	.06	.11	.11	.13	.16	.11
Affiliation	.06	.24*	.34***	.05	.11	-.10	.27**	.11	.02
Altruism	-.16	-.01	-.02	.13	-.02	.21**	-.31***	-.03	.01
Achievement	-.09	.00	-.06	.30***	.17**	.16*	.12	.23**	.01
Power	.03	-.01	-.01	.09	.14	.07	-.17*	-.10	.08
Diversity	.13	-.09	-.10	-.07	-.04	-.11	.06	-.08	.12

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Table 5 shows the life goals explain 5% of the variance convenience motive. The  $R^2$  value for the ethical motive is .03 which tell us that 3% of life goals explained by the eating motives. Also the table provides a value of 8% of familiarity, 19% health, 11% mood, 12% natural, 10% price, 9% sensory and 6% weight which explain life goals. The table also show that convenience nor weight appeared affected by life goals, but achievement has a high positive effect on four eating motives; health, mood, natural and sensory appeal. Also affiliation has an effect on ethics at  $p < .05$ , familiarity at  $p < .001$  and price  $p < .01$ . Also it show that altruism has a positive impact on natural at  $p < .01$  and a negative effect on price motives at  $p < .001$ . However, intimacy nor diversity appeared to effect on eating motives.

## Discussions:

This section features the discussion of the results of the study as well as the methodological issues as expressed in terms of the construct validity, the internal validity, the statistical conclusion validity, and the external validity. This section also features the discussions on the theoretical implications, the applied implications, and recommendations for future research.

## **Methodological Issues**

### **Construct Validity**

In the implementation of the study, several scales were used. The NEO PI-R Scale was used to measure the big five personality traits. As for measuring life goals, the GOALS questionnaire was used. The Diet Section of the Treatment Self-Regulation Questionnaire was used to measure behaviour regulation and as for motives for food choice, The Food Choice Questionnaire was chosen. The food Frequency Questionnaire was used to measure what the participants were eating.

The construct validity of these research instruments were determined based on the reliability tests done on the entire factors involved. The results showed that all factors for all the scales were able to get a Cronbach alpha of not less than 0.64. This explains that the scales provided high levels of construct validity and reliability and proved to be consistent across the participants of the study. This further implies that the scales chosen for the study were proven to be valid in terms of construct validity and reliability.

### **Internal Validity**

In the exploration of the relationship between behaviour regulation, personality traits, food motives, and life goals, the establishment of causal relationships were appropriate. This constitutes for the internal validity of the study.

In the present study, the independent variables are the behaviour regulation, life goals, personality factors, and eating motives. The dependent variable in the study is the food choice, and autonomous regulation. Eating motives was also used as a dependent variable. The variables measured to determine categorization of variables and causal relationships. Good internal validity exhausts all alternative explanations for the observed relationships. Even though this may not be the case, the statistical procedure was still able to tend to the objectives of the study and arrive to support or reject the research hypotheses.

### **Statistical Conclusion Validity**

In order to determine cause and affect relationships, the components for statistical analysis were considered. In the methodology used in the study, 236 students, whose ages ranged from 18 to 30 years, participated in the study. The data gathering tool used was quantitative questionnaires, particularly, the NEO PI-R (Goldberg, 1999), the GOALS Questionnaire (Pöhlmann & Brunstein, 1997), the Diet Section of the Treatment Self-Regulation Questionnaire (Williams, Ryan, & Deci, 2008), the Food Choice Questionnaire (Steptoe & Pollard, 1995), and the Food Frequency Questionnaire.

The statistical procedure involved factor analysis for the participants' answers in the Food Choice Questionnaire, in order to categorize whether a specific food is deemed as healthy or unhealthy. As for internal consistency, the Cronbach's alpha for healthy eating components were determined.

Multiple regression tests was conducted in order to establish causal relationships between behaviour regulation and food choices, between life goals and eating motives, and between personality factors combined with eating motives and autonomous regulation.

### **External Validity**

The results of the study showed that in terms of behaviour regulation, autonomous regulation is positively related to healthy food choices and is negatively related to unhealthy food choices. In terms of controlled regulation, no significant effect was found for both healthy and unhealthy food choices. This means that people who are more autonomous in terms of behaviour regulation tend to choose healthy foods more and stay away from unhealthy foods.

Among the Big 5 personality traits, Neuroticism was found to be positively related to controlled regulation. Extraversion was found to be positively related to autonomous regulation. Openness was

positively related to controlled regulation. In terms of eating motivations, Health was the most related to autonomous regulation, along with natural content. The ethical concern, familiarity, mood, and weight control were significantly related to controlled regulation.

Life goals were correlated with eating motives. Intimacy was positively correlated with sensory appeal, Affiliation with ethical considerations and price, altruism with natural content and price, achievement with health, mood, natural content, and sensory appeal, and power with the price. The results of the study proved to support the research hypotheses, where life goals appear to mediate the effects of intrinsic regulation on healthy eating.

### **Theoretical Implications**

The main aim of the study was to be able to investigate the factors that are relevant to helping people adopt healthier lifestyles. In particular, significant relationships were investigated between behaviour regulation and food choices, between life goals and eating motives, and between personality factors and eating motives and autonomous or intrinsic regulation. The researchers of this study hypothesized that life goals tend to mediate intrinsic or autonomous regulation of eating behaviour.

The results of the study showed that in terms of behaviour regulation, autonomous regulation is positively related to healthy food choices and is negatively related to unhealthy food choices. In terms of controlled regulation, no significant effect was found for both healthy and unhealthy food choices. This means that people who are more autonomous in terms of behaviour regulation tend to choose healthy foods more and stay away from unhealthy foods. The findings appear to be supported by the study of Ingledew, et al. (2009), as autonomous regulation was found to be related to healthier lifestyle practices. This supports the self-determination theory which is primarily the theoretical basis for this study.

The findings indicate that autonomous regulation is significantly related to healthy food choices and is negatively related to unhealthy food choices. It is possible that autonomously regulated participants choose healthy foods because that is what they enjoy doing –which is the act of choosing healthy foods itself, as stated by Ryan and Deci (2000). However, it is interesting to point out that although Ryan and Deci (2000) were able to explain the significant relationship between autonomous regulation and food choice, they were not able to explain why the findings opposed theirs in terms extrinsic or controlled regulation. In view of the results of the present study, the relationship between controlled regulation and food choice is insignificant. One angle to this finding is that the effect of controlled regulation on healthy food choices is mediated by other factors. Thus, it was necessary to determine the motives for eating in relation to behaviour regulation.

The present research also investigated the relationship between personality factors as well as eating motives on behaviour regulation. The results of the study showed that among the big five personality traits, Neuroticism was found to be positively related to controlled regulation. Extraversion was found to be positively related to autonomous regulation. Openness was positively related to controlled regulation. In terms of eating motivations, Health was the most related to autonomous regulation, along with natural content. The ethical concern, familiarity, mood, and weight control were significantly related to controlled regulation. This means that neuroticism, for one, can significantly be caused by controlled regulation. Evidence confirming this can be found in eating disorders such as anorexia nervosa, as indicated by Bollen and Wojciechowski (2004). On the other hand, the results opposed the findings of Tucker, et al. (2006), where high levels of neuroticism were found to be related with high levels of autonomous regulation. It is also important to take note that even though the said factors are related to controlled and autonomous regulation, there is not enough evidence to suggest that the said factors would lead to healthy or unhealthy food choices or behaviour.

Another distinct finding in the present study is the factor loadings on extraversion in relation to autonomous regulation that were shown to be significant, indicating that extraversion is positively related to intrinsic or autonomous regulation. It was earlier established that autonomous or intrinsic regulation is positively related to healthy food choices and negatively related to unhealthy food choices. This is contrast to the findings in the study conducted by Clover and Bothwell (2001) where extraversion was found to be positively related to cigarette smoking. The same results were the same in terms of alcohol drinking (Hampson, et al., 2006). Two of the factors that these studies point out are the presence of sociability and sensation-seeking. It may be possible that there other causes as that correspond to autonomous regulation on healthy food choices. Since the results of the study indicated that only nearly 50% of the variance in both autonomous and controlled regulations can be explained by personality and eating motives factors, a mediating variable may explain why autonomous regulation became significantly related to healthy behaviour. Furthermore, several factors may also have an impact on a given behaviour. An interaction effect may have been present between each of the components of the big five personality traits in relation to healthy behaviour. It may also be possible that other variables such as values and cross-cultural differences may have mediated the effects of personality on autonomous regulation (Ryan & Deci, 2000; Parks & Guay, 2009).

For the third statistical analysis of the study, life goals were considered and compared with motives for eating. The results showed that Intimacy was positively correlated with sensory appeal, Affiliation with ethical considerations and price, altruism with natural content and price, achievement with health, mood, natural content, and sensory appeal, and power with the price. Based on the previous statistical analysis, these eating motives have no significant relationship with autonomous regulation. These findings suggest that life goals tend to mediate the effects of food motives on autonomous regulation, which is an indicator of healthy behaviour. As stated by Roberts, et al. (2004), in a broader sense, life goals can be more complex as they seem. Moreover, it can also be possible that life goals mediate personality traits in terms of autonomous regulation on healthy behaviour, only that it was not tested in the present study, and that there was not enough evidence to suggest the specific life goals that have a direct effect on autonomous regulation.

In summary, a number of key concepts are determined in terms of the influences on the effects of autonomous regulation on healthy behaviour. Firstly, autonomous regulation is significantly related to healthy behaviour. Secondly, the findings of the study supported the hypotheses, as substantiated by literature, where healthy lifestyle is determined in some way, by personality traits. Life goals was also proven to mediate the effects of food motives on autonomous regulation. The model on life goals affecting healthy behaviour proved to be plausible, as based on the self-determination theory discussed by Ingledew, et al. (2009). However, it is still important to consider the importance of life goals on personality traits mediation, even though it is not described in the literature (Baron & Kenny, 1986).

### **Applied Implications**

The results of the study constitute a significant impact to the promotion of psychological health in terms of healthy and unhealthy behaviours. Firstly, personalities tend to respond differently, depending on the environment. These responses can either be healthy or unhealthy, as far as this study is concerned (Parks & Guay, 2009, p. 675). Knowing one's personality traits would then enable psychological practitioners where and when should individuals be placed in order to elicit desired, healthy behaviour. Secondly, the knowledge of how personality traits affect health behaviours would increase the importance of emotional stability, such as neuroticism, in promoting healthy behaviours (Bollen & Wojciechowski, 2001).

The results of the study suggest that life goals have a significant effect on food motives. This appears to be beneficial in the promotion of healthy living by helping individuals to establish their life goals in autonomous regulation. As supported by the study conducted by Robert, et al. (2004), individuals who establish mature life goals are expected to make the right choices and exhibit healthy behaviours. Life goals also have a possibility of influencing personality traits and healthy behaviour. Thus, the results of this study pose significant implications for future research on life goals on healthy behaviour, since it was able to determine which factors are most influential before a final analysis of a direct causal relationship could be established. Moreover, these findings can be beneficial to different fields of psychological practice such as in diet counselling, lifestyle education, rehabilitation, and psychotherapy.

### **Future Research**

The results of the present study were able to confirm the hypotheses of the researchers. However, the study is also bounded by a number of limitations. The study was not able to statistically determine the relationship between life goals and personality traits, although the relationship has been found to be plausible in the related literature. It might also be possible that life goals tend to mediate the effect of personality traits on autonomous regulation since the results suggest that personality traits were not able to fully explain for the regulation of behaviour. Finally, the study was not able to determine a direct link between life goals and healthy behaviour. However, since healthy behaviour was established to be related to autonomous regulation, this model is cited to be highly plausible (Baron & Kenny, 1986). It is also important to take note of the ages of the participants, considering the study of Robert, et al. (2004) indicating a change in life goals across ages.

In connection to the limitations of the present study, a number of recommendations were given by the researchers. It is recommended that future researches on the effects of life goals on healthy behaviours should incorporate a test for relationship between life goals and personality traits. It is also recommended that since possible factors have already been established, a clear study on the relationship between life goals and healthy behaviour should be conducted. In response to the findings of Robert, et al. (2004), a follow up study can also be done in order to determine if the same effects can be observed after a considerable period of time.

It is also recommended that future research should be directed towards the establishment of a proper research instrument in measuring personality, in relation to the aim of this study. The Big Five Personality Questionnaire was successful in reducing personality traits into five main components, which made it fit for the objective of this study. However, other confounding variables such as values and cross-cultural differences might mediate in the relationship with autonomous regulation. A larger sample size is thus, suggested, where cultural differences can also be considered.

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## أثر السمات الشخصية وأهداف الحياة على السلوك الصحي المرتبط

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### المخلص:

تفحص الدراسة المقترحة ما إذا كانت عوامل هدف الحياة مرتبطة بالأكل الصحي ، وما إذا كان الدافع لعوامل الأكل وعوامل الشخصية مرتبط بالتتنظيم الذاتي. سوف تستخدم الدراسة استبيان متعدد الاختيارات يشتمل على خمسة مقاييس مختلفة، شخصية (الخمس الكبار) ، التنظيم (ثلاثة عوامل) ، اختيار الغذاء (ثلاثة عوامل متوقعة)، دافع للأكل (تسعة عوامل)، وأهداف الحياة (ستة عوامل). سيتألف المشاركون من ٢٣٧ طالبًا من جامعة بانجور تتراوح أعمارهم بين ١٨ و ٣٠ عامًا. سيتم تجنيدهم عن طريق أخذ عينات الفرصة. وافق جميع المشاركين الذين تم الاتصال بهم على المشاركة في الدراسة. من المتوقع أن تكون أهداف الحياة الوحيدة التي ترتبط بالأكل الصحي هي الإيثار. يجب أن تكون العلاقة إيجابية. في حالة وجود أهداف أخرى مرتبطة ارتباطًا وثيقًا ، لا يزال من المتوقع أن يكون الإيثار أهم عامل تنبؤ. من العوامل الشخصية، من المتوقع أن يرتبط الضمير بالتنظيم الذاتي. من بين دوافع تناول الطعام، من المتوقع أن ترتبط الصحة والوزن بالتنظيم المستقل. من المتوقع أن تكون هذه الارتباطات الثلاثة الهامة إيجابية. على الرغم من أن الانحدار في حد ذاته لا يمكن أن يقرر أن الارتباطات هي أسباب، فمن المعقول، الحدسي ومن الأدبيات، أن هذه العلاقات الهامة ، إذا وجدت، تشير إلى وجود عوامل سببية في العمل. بشكل عام، من المعقول أن تنطبق هذه النتائج على جانب الأكل الصحي. ولهذا السبب، يجب أن تكون نتائج الدراسة المقترحة ذات أهمية لأولئك المسؤولين عن تعزيز الصحة العامة من خلال تحسين التغذية.

**الكلمات المفتاحية:** سمات الشخصية، السلوك الصحي

## Appendix

### Questionnaire

#### Information Sheet for Research Project on Personality and Food Choices

- This research project is being conducted by Badra Alghanami, Jwahr Alsayari, and Lytone Jamba, MSc students, under the supervision of Dr David Ingledeu, Senior Lecturer, from the School of Psychology, Bangor University.
- The project is about personality and motivation for food choice. We are inviting adults aged 18 years or older to take part. You can take part whether or not you currently eat healthily.
- If you decide to take part, you will be asked to complete a questionnaire, in English, taking about 20 minutes. You will be asked about your age, sex, and ethnic background, your personality and life goals, your eating behaviour and the reasons for your food choices.
- The information you give will be anonymous. You will not be asked to put your name on the questionnaire. You can confirm your consent just by ticking a box. You will not be identifiable in any report of this research.
- Your participation in this research is entirely voluntary. If you do not wish to answer a particular question you can leave it blank. You can withdraw completely any time before submitting the questionnaire. If you withdraw, your questionnaire will be destroyed.
- We will be pleased to answer any questions you may have about the research, before you decide to take part, while you are taking part, or after you have taken part. We can be contacted by email: Badra Alghanami (pspc5b@bangor.ac.uk), Jwahr Alsayari (elpc78@bangor.ac.uk), Lytone Jamba (pspc1e@bangor.ac.uk), David Ingledeu (d.k.ingledeu@bangor.ac.uk). Or by telephone: 01248 382623 (David Ingledeu). Or you can write to us at the School of Psychology, Bangor University LL57 2DG.
- If you have any complaints about the conduct of the research, you can write to Professor Oliver Turnbull, Head of School, School of Psychology, Bangor University, LL57 2DG, UK (o.turnbull@bangor.ac.uk).

#### Taflen wybodaeth ar gyfer Project Ymchwil ar Bersonoliaeth a Dewisiadau Bwyd

- Mae'r project ymchwil hwn yn cael ei gynnal gan Badra Alghanami, Jwahr Alsayari, a Lytone Jamba, myfyrwyr MSc, dan oruchwyliaeth Dr David Ingledeu, Uwch Ddarlithydd, o'r Ysgol Seicoleg, Prifysgol Bangor.
- Mae'r project yn ymwneud â phersonoliaeth a'r hyn sy'n ysgogi dewisiadau bwyd. Rydym yn gwahodd oedolion 18 oed a hŷn i gymryd rhan. Gellwch gymryd rhan p'un a ydych yn bwyta'n iach ar hyn o bryd ai peidio.
- Os penderfynwch gymryd rhan, gofynnir i chi lenwi holiadur, yn Saesneg, a dylai hynny gymryd oddeutu 20 munud. Gofynnir cwestiynau i chi am eich oed, rhyw, cefndir ethnig, eich personoliaeth a'ch amcanion mewn bywyd, eich ymddygiad bwyta a'ch rhesymau dros eich dewisiadau bwyd.
- Bydd y wybodaeth y byddwch yn ei rhoi'n ddiennw. Ni ofynnir i chi roi eich enw ar yr holiadur. Gellwch gadarnhau eich cydsyniad trwy dicio bocs yn unig. Ni fyddwn yn eich enwi mewn unrhyw adroddiad ar yr ymchwil hon.
- Rydych yn cymryd rhan yn yr astudiaeth hon o'ch gwirfodd. Os nad ydych yn dymuno ateb cwestiwn arbennig gellwch ei adael yn wag. Gellwch dynnu'n ôl yn gyfan gwbl unrhyw bryd cyn cyflwyno'r holiadur. Os byddwch yn tynnu'n ôl, bydd eich holiadur yn cael ei ddinistrio.

- Byddwn yn falch o ateb unrhyw gwestiynau a all fod gennych am yr ymchwil, cyn i chi benderfynu cymryd rhan, tra byddwch yn cymryd rhan, neu ar ôl i chi gymryd rhan. Gellwch gysylltu â ni ar e-bost: Badra Alghanami (pspc5b@bangor.ac.uk), Jwahir Alsayari (elpc78@bangor.ac.uk), Lytone Jamba (pspc1e@bangor.ac.uk), David Ingledeu (d.k.ingledeu@bangor.ac.uk). Neu ar y ffôn: 01248 382623 (David Ingledeu). Neu gellwch ysgrifennu atom yn yr Ysgol Seicoleg, Prifysgol Bangor, Gwynedd, LL57 2DG.
- Os oes gennych unrhyw gwynion ynghylch y ffordd mae'r ymchwil yn cael ei chynnal, gellwch ysgrifennu at Dr Oliver Turnbull, Pennaeth Ysgol, Ysgol Seicoleg, Prifysgol Bangor, Gwynedd, LL57 2DG (o.turnbull@bangor.ac.uk).

### Background Information

Throughout this questionnaire, please answer the questions in sequence, without referring back. Try to not let your answers to one question influence your answers to the other questions. There are no correct or incorrect answers, and no trick questions.

First, please tick the following declaration to show you consent to participating in this study.

**Please  
tick**

Having read the information sheet and had a chance to ask questions, I consent to participating in this study

Please give the following background information.

What is your age? \_\_\_\_\_ years

Your gender? Male/Female

How would you describe your ethnic background? \_\_\_\_\_

\_\_\_\_\_

Please continue to the next section.

### What Kind of Person Are You?

On the following pages, there are phrases describing people's behaviours. Please use the rating scale below to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. Please read each statement carefully, and then circle the appropriate number:

1 = Very inaccurate

2 = Moderately inaccurate

3 = Neither inaccurate nor accurate

4 = Moderately accurate

5 = Very accurate

	<i>I ...</i>	<b>Very inaccurate</b>			<b>Very accurate</b>	
1.	Worry about things	1	2	3	4	5
2.	Make friends easily	1	2	3	4	5
3.	Have a vivid imagination	1	2	3	4	5
4.	Trust others	1	2	3	4	5
5.	Complete tasks successfully	1	2	3	4	5
6.	Get angry easily	1	2	3	4	5
7.	Love large parties	1	2	3	4	5
8.	Believe in the importance of art	1	2	3	4	5
9.	Use others for my own ends	1	2	3	4	5
10.	Like to tidy up	1	2	3	4	5
11.	Often feel blue	1	2	3	4	5
12.	Take charge	1	2	3	4	5
13.	Experience my emotions intensely	1	2	3	4	5
14.	Love to help others	1	2	3	4	5
15.	Keep my promises	1	2	3	4	5
16.	Find it difficult to approach others	1	2	3	4	5
17.	Am always busy	1	2	3	4	5
18.	Prefer variety to routine	1	2	3	4	5
19.	Love a good fight	1	2	3	4	5
20.	Work hard	1	2	3	4	5
21.	Go on binges	1	2	3	4	5
22.	Love excitement	1	2	3	4	5
23.	Love to read challenging material	1	2	3	4	5
24.	Believe that I am better than others	1	2	3	4	5
25.	Am always prepared	1	2	3	4	5
26.	Panic easily	1	2	3	4	5
27.	Radiate joy	1	2	3	4	5
28.	Tend to vote for liberal political candidates	1	2	3	4	5
29.	Sympathise with the homeless	1	2	3	4	5
30.	Jump into things without thinking	1	2	3	4	5
31.	Fear for the worst	1	2	3	4	5
32.	Feel comfortable around people	1	2	3	4	5
33.	Enjoy wild flights of fantasy	1	2	3	4	5
34.	Believe that others have good intentions	1	2	3	4	5
35.	Excel in what I do	1	2	3	4	5
36.	Get irritated easily	1	2	3	4	5
37.	Talk to a lot of different people at parties	1	2	3	4	5
38.	See beauty in things that others might not notice	1	2	3	4	5
39.	Cheat to get ahead	1	2	3	4	5
40.	Often forget to put things back in their proper place	1	2	3	4	5
41.	Dislike myself	1	2	3	4	5
42.	Try to lead others	1	2	3	4	5
43.	Feel others' emotions	1	2	3	4	5

44.	Am concerned about others	1	2	3	4	5
45.	Tell the truth	1	2	3	4	5
46.	Am afraid to draw attention to myself	1	2	3	4	5
47.	Am always on the go	1	2	3	4	5
48.	Prefer to stick with things that I know	1	2	3	4	5
49.	Yell at people	1	2	3	4	5
50.	Do more than what's expected of me	1	2	3	4	5
51.	Rarely overindulge	1	2	3	4	5
52.	Seek adventure	1	2	3	4	5
53.	Avoid philosophical discussions	1	2	3	4	5
54.	Think highly of myself	1	2	3	4	5
55.	Carry out my plans	1	2	3	4	5
56.	Become overwhelmed by events	1	2	3	4	5
57.	Have a lot of fun	1	2	3	4	5
58.	Believe that there is no absolute right or wrong	1	2	3	4	5
59.	Feel sympathy for those who are worse off than myself	1	2	3	4	5
60.	Make rash decisions	1	2	3	4	5
61.	Am afraid of many things	1	2	3	4	5
62.	Avoid contacts with others	1	2	3	4	5
63.	Love to daydream	1	2	3	4	5
64.	Trust what people say	1	2	3	4	5
65.	Handle tasks smoothly	1	2	3	4	5
66.	Lose my temper	1	2	3	4	5
67.	Prefer to be alone	1	2	3	4	5
68.	Do not like poetry	1	2	3	4	5
69.	Take advantage of others	1	2	3	4	5
70.	Leave a mess in my room	1	2	3	4	5
71.	Am often down in the dumps	1	2	3	4	5
72.	Take control of things	1	2	3	4	5
73.	Rarely notice my emotional reactions	1	2	3	4	5
74.	Am indifferent to the feelings of others	1	2	3	4	5
75.	Break rules	1	2	3	4	5
76.	Only feel comfortable with friends	1	2	3	4	5
77.	Do a lot in my spare time	1	2	3	4	5
78.	Dislike changes	1	2	3	4	5
79.	Insult people	1	2	3	4	5
80.	Do just enough work to get by	1	2	3	4	5
81.	Easily resist temptations	1	2	3	4	5
82.	Enjoy being reckless	1	2	3	4	5
83.	Have difficulty understanding abstract ideas	1	2	3	4	5
84.	Have a high opinion of myself	1	2	3	4	5
85.	Waste my time	1	2	3	4	5
86.	Feel that I'm unable to deal with things	1	2	3	4	5
87.	Love life	1	2	3	4	5
88.	Tend to vote for conservative political candidates	1	2	3	4	5
89.	Am not interested in other people's problems	1	2	3	4	5

90.	Rush into things	1	2	3	4	5
91.	Get stressed out easily	1	2	3	4	5
92.	Keep others at a distance	1	2	3	4	5
93.	Like to get lost in thought	1	2	3	4	5
94.	Distrust people	1	2	3	4	5
95.	Know how to get things done	1	2	3	4	5
96.	Am not easily annoyed	1	2	3	4	5
97.	Avoid crowds	1	2	3	4	5
98.	Do not enjoy going to art museums	1	2	3	4	5
99.	Obstruct others' plans	1	2	3	4	5
100.	Leave my belongings around	1	2	3	4	5
101.	Feel comfortable with myself	1	2	3	4	5
102.	Wait for others to lead the way	1	2	3	4	5
103.	Don't understand people who get emotional	1	2	3	4	5
104.	Take no time for others	1	2	3	4	5
105.	Break my promises	1	2	3	4	5
106.	Am not bothered by difficult social situations	1	2	3	4	5
107.	Like to take it easy	1	2	3	4	5
108.	Am attached to conventional ways	1	2	3	4	5
109.	Get back at others	1	2	3	4	5
110.	Put little time and effort into my work	1	2	3	4	5
111.	Am able to control my cravings	1	2	3	4	5
112.	Act wild and crazy	1	2	3	4	5
113.	Am not interested in theoretical discussions	1	2	3	4	5
114.	Boast about my virtues	1	2	3	4	5
115.	Have difficulty starting tasks	1	2	3	4	5
116.	Remain calm under pressure	1	2	3	4	5
117.	Look at the bright side of life	1	2	3	4	5
118.	Believe that we should be tough on crime	1	2	3	4	5
119.	Try not to think about the needy	1	2	3	4	5
120.	Act without thinking	1	2	3	4	5

Please continue to the next section.

### What Are Your Goals in Life?

On this page you will find a list of goals people want to reach in their lives. Please mark for each goal how *important* it is for you to reach this goal *in your life*:

0 = Not at all important for me

2 = Somewhat important for me

4 = Very important for me

	<i>I would like to ...</i>	0	1	2	3	4
1.	Improve my education continuously	0	1	2	3	4
2.	Broaden my horizons	0	1	2	3	4
3.	Gain public recognition	0	1	2	3	4
4.	Develop my skills	0	1	2	3	4
5.	Enjoy life to the full	0	1	2	3	4
6.	Be friends with many people	0	1	2	3	4
7.	Help other people who are in need	0	1	2	3	4
8.	Lead a thrilling life	0	1	2	3	4
9.	Receive affection and love	0	1	2	3	4
10.	Have trusting relationships with other people	0	1	2	3	4
11.	Have a wide circle of acquaintances	0	1	2	3	4
12.	Lead an exciting life	0	1	2	3	4
13.	Continuously improve myself	0	1	2	3	4
14.	Have prestigious positions	0	1	2	3	4
15.	Do good	0	1	2	3	4
16.	Support other people's causes	0	1	2	3	4
17.	Have a high social status	0	1	2	3	4
18.	Be able to exert influence	0	1	2	3	4
19.	Spend a lot of time with other people	0	1	2	3	4
20.	Have a close relationship	0	1	2	3	4
21.	Engage in a lot of activities with other people	0	1	2	3	4
22.	Live a life of adventure	0	1	2	3	4
23.	Give affection and love	0	1	2	3	4
24.	Act unselfishly	0	1	2	3	4

Please continue to the next section.

### What Do You Eat?

Following is a list of various foods. Please indicate how often on average you eat each of the foods, by circling the appropriate frequency.

		Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
1.	100% fruit juices such as orange juice, apple juice, or grape juice (not counting fruit-flavoured drinks.)								
2.	Fruit (not counting juices)								

3.	Green salad	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
4.	Potatoes (not counting chips, fried potatoes, or crisps)	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
5.	Carrots	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
6.	Peas	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
7.	Other vegetables (not counting salad, potatoes, carrots, or peas)	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
8.	Biscuits including savoury biscuits	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
9.	Sweets or chocolate	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
10.	Cakes of all kinds	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
11.	Bread or rolls	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
12.	Pulses, such as baked beans, dried beans, and lentils	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
13.	Crisps and salty snacks	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
14.	Chips, including oven chips	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day
15.	Fizzy drinks, or soft drinks like squash, excluding diet or sugar-free drinks	Never	Less than once a week	1 to 3 times a week	4 to 6 times a week	1 time per day	2 times per day	3 times per day	4 or more times per day

Please continue to the next section.

### Reasons for Your Food Choices

On the following pages are a number of the reasons people give when asked why they choose to eat the food they do. Which reasons are important to you?

0 = Not at all important for me

2 = Somewhat important

4 = Very important for me

<i>It is important to me that the food I eat on a typical day ...</i>		<b>Not at all important for me</b>		<b>Very important for me</b>		
1.	Contains a lot of vitamins and minerals .....	0	1	2	3	4
2.	Looks nice.....	0	1	2	3	4
3.	Makes me feel good .....	0	1	2	3	4
4.	Helps me relax .....	0	1	2	3	4
5.	Is what I usually eat.....	0	1	2	3	4
6.	Keeps me awake/alert.....	0	1	2	3	4
7.	Comes from countries I approve of politically .....	0	1	2	3	4
8.	Is nutritious .....	0	1	2	3	4
9.	Helps me cope with stress .....	0	1	2	3	4
10.	Is good value for money .....	0	1	2	3	4
11.	Contains natural ingredients .....	0	1	2	3	4
12.	Takes no time to prepare .....	0	1	2	3	4
13.	Can be bought in shops close to where I live or work ..	0	1	2	3	4
14.	Is cheap.....	0	1	2	3	4
15.	Is easy to prepare.....	0	1	2	3	4
16.	Is high in protein .....	0	1	2	3	4
17.	Is not expensive.....	0	1	2	3	4
18.	Contains no additives .....	0	1	2	3	4
19.	Is easily available in shops and supermarkets .....	0	1	2	3	4
20.	Is low in calories .....	0	1	2	3	4
21.	Is familiar.....	0	1	2	3	4
22.	Is packaged in an environmentally friendly way .....	0	1	2	3	4
23.	Is low in fat .....	0	1	2	3	4
24.	Is good for my skin/teeth/hair/nails etc .....	0	1	2	3	4
25.	Tastes good .....	0	1	2	3	4
26.	Helps me cope with life .....	0	1	2	3	4
27.	Contains no artificial ingredients .....	0	1	2	3	4
28.	Can be cooked very simply.....	0	1	2	3	4
29.	Is like the food I ate when I was a child .....	0	1	2	3	4
30.	Has the country of origin clearly marked .....	0	1	2	3	4
31.	Helps me control my weight.....	0	1	2	3	4
32.	Is high in fibre and roughage .....	0	1	2	3	4
33.	Smells nice.....	0	1	2	3	4
34.	Cheers me up .....	0	1	2	3	4
35.	Has a pleasant texture.....	0	1	2	3	4
36.	Keeps me healthy .....	0	1	2	3	4

### **Reasons for Healthy Eating**

The following question relates to the reasons why you would either start eating a healthier diet or continue to do so. Different people have different reasons for doing that, and we want to know how true each of the following reasons is for you. Please indicate the extent to which each reason is true for you:

0 = Not at all true for me

2 = Somewhat true for me

4 = Very true for me

<i>The reason I would eat a healthy diet is ...</i>		<b>Not at all true for me</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Very true for me</b>	<b>4</b>
1.	Because I feel that I want to take responsibility for my own health	0	1	2	3	4	
2.	Because I would feel guilty or ashamed of myself if I did not eat a healthy diet	0	1	2	3	4	
3.	Because I personally believe it is the best thing for my health	0	1	2	3	4	
4.	Because others would be upset with me if I did not	0	1	2	3	4	
5.	Because I have carefully thought about it and believe it is very important for many aspects of my life	0	1	2	3	4	
6.	Because I would feel bad about myself if I did not eat a healthy diet	0	1	2	3	4	
7.	Because it is an important choice I really want to make	0	1	2	3	4	
8.	Because I feel pressure from others to do so	0	1	2	3	4	
9.	Because it is consistent with my life goals	0	1	2	3	4	
10.	Because I want others to approve of me	0	1	2	3	4	
11.	Because it is very important for being as healthy as possible	0	1	2	3	4	
12.	Because I want others to see I can do it	0	1	2	3	4	

Thank you for completing the questionnaire.

## Debrief Sheet for Research Project on Personality and Food Choices

Thank you for taking part in our research.

Previous research had identified various personality traits and life goals. Major personality traits are neuroticism, extraversion, openness, agreeableness, and conscientiousness. Major life goals are intimacy (close relationships), affiliation (spending time with other people), altruism (acting for the welfare of others), power (asserting oneself), achievement (improving on oneself), and variation (seeking new experiences and excitement).

In our research, we are interested in how these personality traits and life goals influence motivation for food choice. Therefore, in the study, you were asked about your personality and life goals, your eating behaviour, and the motives (reasons) for your food choices. We will combine the data of all the people who took part in the study. We will then be able to identify which personality traits and life goals influence which motives for food choice, and which motives lead to more or less healthy eating.

Further information about healthy eating is available from NHS Direct (<http://www.nhsdirect.nhs.uk/>). We will be glad to answer any questions you may have regarding the research, and we would welcome any feedback about your experience as a participant. You are welcome to request a copy of the findings of the research.

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## **Taflen wybodaeth ar gyfer Project Ymchwil ar Bersonoliaeth a Dewisiadau Bwyd**

Diolch i chi am gymryd rhan yn ein hymchwil.

Mae ymchwil flaenorol wedi nodi gwahanol nodweddion personoliaeth ac amcanion bywyd. Y prif nodweddion personoliaeth yw niwrotiaeth, allblygedd, didwylledd, hynawsedd a chydwybodolrwydd. Prif amcanion bywyd yw agosatrwydd (datblygu perthynas agos ag eraill), cysylltiad (treulio amser gyda phobl eraill), allgaredd (gweithredu er lles eraill), grym (pendantrwydd), cyrhaeddiad (gwella eich hun) ac amrywiaeth (chwilio am brofiadau a chyffro newydd).

Yn ein hymchwil, mae gennym ddiddordeb yn y ffordd mae'r nodweddion personoliaeth ac amcanion bywyd hyn yn ysgogi dewisiadau bwyd. Felly, yn yr astudiaeth, gofynnwyd cwestiynau i chi am eich personoliaeth a'ch amcanion mewn bywyd, eich ymddygiad bwyta a'ch rhesymau dros eich dewisiadau bwyd. Byddwn yn cyfuno data'r holl bobl a gymerodd ran yn yr astudiaeth. Byddwn wedyn yn gallu gweld pa nodweddion personoliaeth ac amcanion bywyd sy'n dylanwadu ar ba gymhellion ar gyfer dewis bwydydd, a pha gymhellion sy'n arwain at fwyta'n fwy iach nau'n llai iach.

Mae gwybodaeth bellach am fwyta'n iach ar gael NHS Direct (<http://www.nhsdirect.nhs.uk/>).

Byddwn yn falch o ateb unrhyw gwestiynau a all fod gennych ynghylch yr ymchwil, a byddem yn croesawu unrhyw sylwadau am eich profiad fel rhywun sy'n cymryd rhan. Mae croeso i chi ofyn am gopi o ddarganfyddiadau'r ymchwil.

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