



Development of an Instrument for Measuring Intention to ACT and Healthy Eating Behavior of Students

Lia Junita Harahap¹, Lena Juliana Harahap²

¹Prodi Tadris Biologi, Fakultas Tarbiyah dan Ilmu Keguruan, UIN Syekh Ali Hasan Ahmad Addary Padangsidempuan, Indonesia

²Prodi Kesehatan Masyarakat Program Sarjana, STIKes Darmas Padangsidempuan, Indonesia

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CORRESPONDENCE

E-mail: lijunitahrp@uinsyahada.ac.id

A B S T R A C T

The instrument is one of the supporting successes of learning. Assessment of student behavior will influence students' thoughts and decisions in taking more positive action. This study aims to develop a valid and reliable instrument for students' intention to act and Healthy Eating Behavior. The resulting instrument was a test in the form of a checklist. This research was conducted from March to April 2022 at SMA Negeri 1 Sayur Matinggi with a sample of 38 students from Natural Science 1 and Natural Science 2 classes. The research method uses the ADDIE model (Analyze, Design, Develop, Implement, Evaluate) adopted from the Branch. However, this research only reached the development stage. The results showed that the instrument for assessing the intention to act, and Healthy Eating Behavior was feasible with the respective expert validation results of 87.50 and 84.38. The results of the empirical validation show that 41 questions about the intention to act and 40 questions about healthy eating behavior were valid because they were more than 0.320, and the reliability was more than 0.6.

INTRODUCTION

Children in middle school age or teenagers are still physically and mentally developing. These changes or developments lead to various problems and changes in behavior, including changes in eating behavior that are good or bad eating behavior. Eating behavior is consuming food according to each individual's nutritional needs, which can be achieved by consuming nutrients in a balanced manner. Food choices and consumer behavior regarding food consumption are increasingly important (Vermeir et al., 2020).

Developing countries generally have problems consuming nutritious food, where 80% of people's energy comes from carbohydrates (Mokoginta et al., 2016). Simple and frugal food are the most popular types of food according to the range of sustainable consumer behaviors. In particular, Generation Z consumers mostly want sustainable, good eating behaviors (Fitzpatrick et al., 2020), while their environment does not support healthy buying behavior (Neill et al., 2023). This behavior continues to become a habit; much food and garbage are wasted. The concept of Healthy Eating Behavior goes beyond mere knowledge of nutritional recommendations.

The concept of Healthy Eating Behavior goes beyond mere knowledge of nutritional recommendations. Intention to Act in achieving Healthy Eating Behavior cannot be separated from the cultural mix of nutrition, health knowledge, and the environment (Dey et al., 2019; Perry et al., 2017). Intention becomes a motivating factor that influences certain behaviors. The stronger the intention, the more likely

certain activities will be (Szymkowiak et al., 2022; Rasool et al., 2021; Aktas et al., 2018). Socio-demographic characteristics influence fruit consumption behavior (Kaliji et al., 2022). A country that has a tropical climate with abundant biodiversity makes people living in these locations accustomed to consuming fruits and vegetables. The lifestyle was also identified as an essential factor (Miguel et al., 2022; Lena Juliana Harahap & Harahap, 2022).

An unhealthy lifestyle and eating behaviors can improve or harm long-term health. Evidence shows that eating fruits and vegetables can protect against many chronic diseases, such as cardiovascular disease and diabetes, while consuming too much-saturated fat, sugar, and salt can exacerbate health problems. Eating behavior, which includes the selection of children's and adolescents' food types, is primarily influenced by descriptive norms (Hamzah et al., 2021; Sharps & Robinson, 2016); good food positively influences eating behavior (Wijayaratne et al., 2018; Szymkowiak et al., 2022).

Developing students' Intention to Act and Healthy Eating Behavior can be improved by assessing students. One way to increase student awareness in behaving or consuming healthy food is by holding a more emphasized assessment (Amicarelli & Bux, 2021). Therefore, assessment is critical to cultivate the importance of consuming healthy food daily, which can help the body stay fit and avoid various diseases. A healthy body will have an impact on student achievement.

Assessment will also be good if the instrument is used (Lia Junita Harahap et al., 2020). The quality of the assessment instrument will directly affect the results' accuracy. Therefore, instruments that can awaken, develop, and familiarize students to Act and behave in healthy eating are urgently needed and are equipped with appropriate assessment rubrics so that students are accustomed to thinking about the attitudes and food they consume, whether they are right or not for their health. The four conditions for a good instrument include being valid (valid), reliable (can be trusted), practical (can be used), and economical (not wasteful). A good instrument has several preparation steps: 1. Referring to the syllabus, 2. They are compiling a question grid, three and compiling questions, 4. Carrying out test trials, 5. They are making scoring guidelines (Kadir, 2015).

The results of interviews with teachers regarding healthy food at SMAN 1 Sayur Matinggi showed that the teacher monitored the types of food or snacks sold in the school canteen but occasionally missed the teacher's monitoring. Students also often bring snacks from outside the school into the school.

Environment. Before the assessment, the questions were validated to determine whether they were suitable for assessing students' intention to act and healthy eating behavior. The test will be considered eligible if the validity and reliability requirements are met (Baldinger & Lai, 2019). Therefore, a valid and reliable assessment instrument needs to be developed. The acting and Healthy Eating Behavior instrument in this study refers to the ADDIE development model (Analyze, Design, Develop, Implement, Evaluate). This research and development aim to produce a valid and reliable instrument for students' Intention to Act and

Healthy Eating Behavior so that it can be used as an alternative in measuring, training, and increasing students' Intention to Act and behave in healthy eating.

METHOD

The method used in making the Intention to Act and Healthy Eating Behavior test product for class XI students is research and development (R&D). This study adapted the ADDIE development model from Branch. The ADDIE model has five implementation stages, namely:



However, this research only reached the development stage. The population in this study were all class XI students of SMA Negeri 1 Sayur Matinggi, with a sample of 38 students for the 2021/2022 academic year. The following describes each stage.

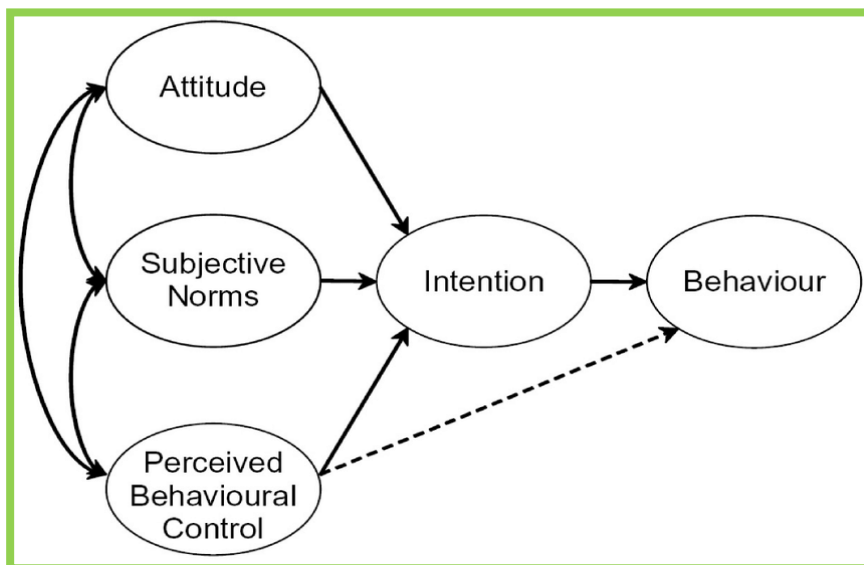


Figure 1. The Theory of Intention to Act

A. Analyze Phase

This stage aims to determine and define learning requirements, which consist of the following steps: (a) initial and final analysis, (b) student analysis, (c) task analysis, and (d) material concept analysis.

B. Design Stage

This stage is the initial planning or design stage, such as making an outline, determining the indicators to be measured (Tables 1 and 2), and developing the Intention to Act instrument from Ajzen (1991) and

Healthy Eating Behavior in the form of a checklist, complete with an assessment rubric. Ajwen's theoretical model is illustrated in Figure 1.

The factors in the theoretical model in Figure 1 act as determinants of behavioral intentions, influencing the individual's actual behavior. Attitude is a person's feelings of pleasure or displeasure towards behavior. Subjective norms are individual estimates of social pressure to perform or not perform the target behavior.

Table 1. Indicators of Intention to Act

Variable	Indicator	Description Problem
Intention to Act	Attitude Toward the Behavior	The desire to eat food with balanced nutrition
		Desire to grow vegetables and fruit
		The desire for a variety of healthy foods
Intention to Act	Subjective Norm	The desire to uphold the rules for consuming food and beverages in Indonesia.
		The desire does not violate the rules for consuming halal food and drinks.
Intention to Act	Perceived Behavior Control	Desire not to overeat, not eat food or drink with preservatives, and reduce consumption of fried foods.
		Desire to prefer the consumption of plant-based nutrition
		The desire to share knowledge about healthy eating substances with family, friends, and the community

Table 2. Healthy Eating Behavior Indicators

Variable	Indicator
Healthy Eating Behavior	Time and Number of Food
	Food Hygiene
	Selection of Food and Beverage Types

C. Develop stage

This stage consists of instrument assessment by the validator and empirical validation of students. Here's the development sequence.

1. Expert judgment

Experts (validators) in developing this instrument are Masters of Nutrition and Master of Public Health, experts in Intention to Act, Healthy Eating Behavior, and nutrition.

2. Instrument Development Test

Instruments that have been validated by experts (construct and content validation) are then tested on students. The test results determine the empirical validity and reliability of the Intention to ACT and Healthy Eating Behavior.

RESULT AND DISCUSSION

The results of this study were in the form of an Intention to Act questionnaire instrument and a Healthy Eating Behavior questionnaire for students. The following are the results of instrument development for each phase.

1. Analyze

This analysis was carried out on teachers who teach in class XI of science in unstructured interviews regarding learning activities, eating, and snacks for students at school. Based on the interviews, the teacher said that no one was selling outside the school gates because the school was far from residential areas, and no other buildings were around. So, students only snack in the school canteen. In addition, students also bring food and snacks from home.

Based on interviews conducted with teachers, the Intention to Act and Healthy Eating Behavior of students still need to improve. This can be seen from the preliminary test results achieved in the low category. The results can be seen in Table 3 and Table 4. The questionnaire about students' intention to act and healthy eating behavior consisted of 50 statements: 25 statements to measure the intention to work and 25 statements to measure students' healthy eating behavior. Expert lecturers have validated these questions and are indicators of students' Intention to Act and Healthy Eating Behavior.

Table 3. Average student answers from the Intention to Act indicator

Variable	Indicator	Average	Total Rate	Percentage	
				P	NP
Intention to Act	Attitude Toward the Behavior	72.82	73.57	31%	69%
	Subjective Norm	81.23			
	Perceived Behavior Control	66.67			

Inf: P (Pass), NP (Not Pass)

Table 4. Average student answers for indicators of healthy eating behavior

Variable	Indicator	Average	Total Rate	Percentage	
				P	NP
Healthy Eating Behavior	Time and Number of Food	62.41	58.80	12%	88%
	Food Hygiene	60.86			
	Selection of Food and Beverage Types	53.12			

Inf: P (Pass), NP (Not Pass)

Based on Table 3 and Table 4, the average results of students' Intention to Act were 73.57, and students' Healthy Eating Behavior was 58.80. It is still in the low category. For the Intention to Act, only 31% are good, while for Healthy Eating Behavior, it is as much as 12%. The achievement results on the Intention to Act indicator are higher than those on Healthy Eating Behavior. This is because students are more concerned with health, namely by consuming healthy food rather than direct action; students still need help starting the habit of consuming healthy food. Moreover, there is much unhealthy food around students, created from the family, play, and school environments.

a. Task Analysis

Based on the initial and final analysis and student analysis, efforts are needed to increase students' Intention to Act and Healthy Eating Behavior. One is by providing an assessment instrument that includes all healthy eating habits.

b. Content Concept Analysis

The results of the analysis were obtained from healthy food standards according to WHO, which are summarized in 3 ways, namely (1) increasing consumption of vegetables, fruit, whole grains, nuts, and whole grain cereals, (2) reducing consumption of salt, sugar, rice, and all that is white, or which have undergone a refining process, (3) must avoid trans fats.

2. Design

a. The stage of making an outline and determining indicators

Designing the Intention to Act and Healthy Eating Behavior instruments differ because they have different indicators. The following is presented in Table 5 and Table 6.

Table 5. Instrument design and determination of the Intention to Act as indicators

NO	QUESTION	A	O	ST	S	N
<i>Subjective Norm</i>						
1	I want to consume expired free food because it is delicious and expensive.					
2	Etc					

Inf: A=Always, O=Often, ST=Sometimes, S=Seldom, atau N=Never

Table 6. Instrument design and determination of Healthy Eating Behavior

NO	QUESTION	A	O	ST	S	N
Selection of Food and Beverage Types						
1	I prefer to consume bananas rather than fried bananas.					
2	Etc					

Inf: A=Always, O=Often, ST= Sometimes, S=Seldom, atau N=Never

The outlines in Tables 5 and 6 consist of indicators or aspects measured in the Intention to Act, Healthy Eating Behavior, questions, and answer keys.

b. Development of Intention to Act instruments and Healthy Eating Behavior

The intention to act instrument that has been developed consists of 41 positive and negative questions in multiple choice. Meanwhile, the Healthy Eating Behavior instrument comprised 39 positive and multiple-choice negative questions.

An example of measuring the Intention to Act

I limit my consumption of sweets, soft drinks, and foods with added sugar

A = Always

O = Often

ST = Sometimes

S = Seldom

N = Never

The answer that gets the highest points is “A=Always” because by limiting sweet foods, soft drinks, and foods with added sugar, you can prevent diseases such as diabetes, stroke, and muscle and kidney disorders.

Examples of questions measuring Healthy Eating Behavior

I don't want to buy or eat fried food that vehicle fumes have hit on the side of the road.

The answer that gets the highest points is “A=Always” because you can avoid various diseases, such as increased bad cholesterol, by not consuming fried foods sold on the side of the road. Fried food sold on the side of the road is also susceptible to microbes and the heavy metal Lead (Pb).

Table 7. Instrument design and determination of the Healthy Eating Behavior as indicators

No	Indicator	Question	Answer
1	Subjective Norm	I want to consume expired free food because it is delicious and expensive	A = Always = 1 O = Often = 2 ST = Sometimes = 3 S = Seldom = 4 N = Never = 5

Table 8. Instrument design and determination of Healthy Eating Behavior

No	Indicator	Question	Answer
1	Selection of Food and Beverage Types	I prefer to consume bananas rather than fried bananas	A = Always = 1 O = Often = 2 ST = Sometimes = 3 S = Seldom = 4 N = Never = 5

3. Develop

a. Expert Score

The validators in this study were two lecturers from the Master of Public Health and Master of Nutrition who are experts in the Intention to Act for Healthy Eating and Healthy Eating Behavior. The validation process refers to indicators of will act, Healthy Eating Behavior, and healthy food standards.

In the validation process, validator I and validator II provided comments and suggestions about the accuracy of the statement, presentation of the statement, the concept of healthy food, the appropriateness of the indicators of Intention to Act, and Healthy Eating Behavior towards the statement. Instrument development that has been carried out will be assessed by the validator in the form of a number, namely, 1 to 100. The aspects evaluated consist of the assessment technique's suitability, the instrument's completeness, content suitability, the construction of the questions, and the language. Then, the average will be sought to determine the instrument's feasibility, as shown in Table 8.

Table 9. Expert validator scores for the Intention to Act and Healthy Eating Behavior

Component	Question type	Expert	Percentage of appropriateness	Total Rate	Conclusions
Intention to Act	Checklist	Expert I	84.38	87.50	Very Appropriate
		Expert II	90.63		
Healthy Eating Behavior	Checklist	Expert I	81.25	84.38	Very Appropriate
		Expert II	87.50		

Table 8 shows that the developed instrument is appropriate or feasible to measure students' Intention to Act and Healthy Eating Behavior because it achieves an average of 81.03 and 85.00. Therefore, further empirical validation can be carried out.

b. Results of Empirical Validation and Reliability

The results of calculating the validity of the Intention to Act and Healthy Eating Behavior of 38 students using the Pearson product-moment are in Table 9 and Table 10.

Table 10. The results of the validation of students' Intention to Act

Question Validity Criteria	Question Number	Amount
Valid	1, 2, 3, 4, 6, 7, 8, 10, 11, 13, 14, 15, 16, 19, 20, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 53, 54	41
Invalid	5, 9, 12, 17, 18, 21, 22, 23, 24, 27, 50, 51, 52, 55	14

Based on Table 7, the validity of the items on the Intention to Act that meet valid criteria or exceed the minimum value is 41 questions because the table is 0.320. The result of instrument reliability is 0.987, which meets the requirements of a very reliable question. Interpretation of reliability can be determined if it has $r_{11} \geq 0.6$ (Suharsimi, 2013). This shows that the instrument that has been developed has very high reliability. The validity of Healthy Eating Behavior questions can be found in Table 10.

Table 11. Results of the calculation of the validity of the test items

Question Validity Criteria	Question Number	Amount
Valid	2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 47, 48	39
Invalid	1, 9, 12, 23, 24, 27, 34, 44, 46	9

Based on Table 5, the r table of 0.320 yields 39 valid Healthy Eating Behavior items. The result of instrument reliability is 0.986. This shows that the instrument has very high reliability, which means the constancy of the instrument when applied wherever and whenever, will relatively give the same results. Several instruments of Intention to Act and Healthy Eating Behavior that are valid and reliable are in Appendix 1 and Appendix 2.

CONCLUSION

Based on the research results, it can be concluded that the instrument of Intention to Act and Healthy Eating Behavior in the form of a checklist that has been developed is appropriate to be used to measure students' Intention to Act and Healthy Eating Behavior. The developed instrument is expected to assist teachers in directing students to care more about health by paying attention to the positive and negative impacts of the food consumed, starting from small steps and breakthroughs so that they become accustomed to it.

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