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Teaching Quantitative Methods Vignettes

Using Learning by Doing to teach the development of a Likert scale for measuring attitude

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Abstract ■ Knowing how to create Likert scales in quantitative research is almost a necessity. This vignette presents an activity to help students learn how to develop an attitude scale using Likert's method, attitude being a key concept in psychology and related fields. Inspired by various learning theories and principles (e.g., andragogy, guided practice), this activity provides a hands-on project that mimics the real-world process of developing an attitude scale. Guided by the teacher, the students choose and define an attitude object, generate an item pool, review the items and determine which ones to keep for the scale, administer the scale to a sample of participants, and evaluate the reliability of the scale using the collected data. This activity helps students put theory into practice.

Keywords ■ Theory of attitudes, Likert scale, test theory.

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Concept to be presented

Courses in quantitative methods need to present the various steps of a quantitative research process. Although there are slight variations among authors regarding these steps (e.g., Chu, 2024; Cooper & Schindler, 2006), the process can be summarized in five phases (Fortin & Gagnon, 2022):

1. Conceptual: includes the research question, literature review, theoretical framework, aim, objectives, and hypotheses.
2. Methodological: concerns the choice of research design and sampling method, definition of the population, instrument selection or development, and ethical considerations.
3. Empirical: refers to the data collection process.
4. Analytical: concerns data analysis, results interpretation, and conclusions.
5. Reporting: refers to the communication of research results through various channels, such as scientific papers and presentations, and to a variety of audiences.

The need to develop a scale usually arises during the methodological phase when data collection instruments must be selected. Indeed, measurement scales are one of the most popular data collection instruments and researchers frequently need to develop one or more scales for a project.

Learning how to develop a measurement scale is therefore essential for graduate students in psychology and related fields. In the context of a course on quantitative research methods, it is thus appropriate to discuss it during the methodology phase.. In this paper we outline how students can learn to develop a measurement scale through an attitude scale development project. The main benefit of this activity is that it allows students to experience scale development first-hand. We suggest an attitude scale because attitude is an important concept in many fields, including psychology.

Importance of the concept of attitude

Many graduate students of psychology and social psychology need to learn how to develop an attitude scale because attitude is a key concept in their field, as well as in many other fields such as social sciences, health, education, and marketing. Measuring people's attitudes helps us understand how they interpret and react to the world. As summa-

rized by Erwin (2001) and Fabrigar et al. (2005), attitudes can serve multiple functions, such as facilitating the integration of new information, maintaining and promoting self-esteem, conveying information about people's values and self-concept, and achieving desired goals or avoiding negative outcomes. The concept of attitude is also central to social and behavioural science theories, such as the theory of interpersonal behaviour (Triandis, 1977) and the theory of planned behaviour (Ajzen, 1985), as well as persuasion theories, such as the elaboration likelihood model (Petty & Cacioppo, 1986). For this reason, the concept of attitude has been extensively used to understand the adoption of different kinds of behaviours and to foster behavioural changes (e.g., De Cannière et al., 2009; George, 2004; Godin & Kok, 1996; Hansen et al., 2004; Hrubes et al., 2001; Reinecke et al., 1996; Valois et al., 2020).

Definition of attitude

Attitude is a construct or, in other words, a latent variable. A latent variable is an abstraction and cannot be observed or measured directly. It needs to be inferred or approximated using manifest (i.e., observable or measurable) variables that reflect the unobservable latent variable (American Psychological Association, 2024). More precisely, an attitude can be defined as "a latent disposition or tendency to respond with some degree of favorableness or unfavorableness to a psychological object" (Fishbein & Ajzen, 2010, p. 76). Attitudes are evaluative in nature and can be characterized by their direction (favourable/unfavourable), their strength (high/low degree of favourableness/unfavourableness), and their stability in time (Eagly & Chaiken, 1993; Fishbein & Ajzen, 2010).

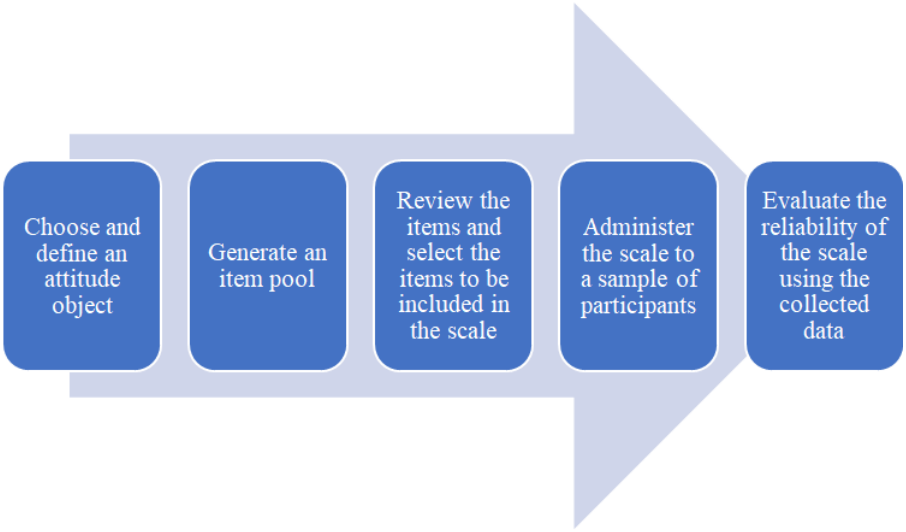
Measuring attitude

Different methods of measuring attitude have been proposed since the beginning of the 20th century (e.g., Fishbein & Ajzen, 1975; Guttman, 1944; Likert, 1932; Osgood, 1952; Thurstone, 1928). The learning activity we present here can be adapted to teach these different methods of measurement. We focus on the Likert scale (Likert, 1932) as it is one of the most popular scales used today (Aiken, 2002). Likert scales require the respondents to indicate the extent to which they agree or disagree with a group of statements reflecting a favourable or unfavourable attitude towards the object of interest. According to attitude theory, a person who agrees with statements reflecting a favourable attitude and who disagrees with statements reflecting an unfavourable attitude towards a given object or behaviour will have a very favourable attitude towards that object or behaviour. Inversely, a person who agrees with statements reflecting an unfavourable attitude and who disagrees with statements reflecting a favourable attitude towards a given object or behaviour will have a very unfavourable attitude towards that object or behaviour.

A Likert scale can be developed using standard procedures for scale development. DeVellis and Thorpe (2021) summarize this process in nine steps:

- *Step 1: Determine clearly what it is you want to measure.* Define the construct of interest and the purpose of the scale. Specify the boundaries of the construct, its relations to other constructs, and the level of generality or specificity at which to measure the construct. Whenever possible, use theory as a guide.
- *Step 2: Generate an item pool.* Generate as many items as possible that reflect the construct of interest. It is important to develop items covering all the aspect of the construct. At this step, it can be helpful to generate more than one item reflecting a similar idea. The following steps will benefit from having a large pool of items as they aim to select the best ones to retain in the scale.
- *Step 3: Determine the format for measurement.* In the context of a Likert scale, this step mainly consists of choosing the response options. The following decisions need to be made: (*i*) What continuum will the response options reflect? Most often than not, the options reflect a bipolar continuum ranging from strong disagreement to strong agreement. (*ii*) How many response options? Usually between 5 to 7. Depending on the context, an odd or even number of response options is chosen. An odd number of response options allows for the inclusion of a neutral point. (*iii*) What labels to choose to communicate the meaning of the response options to the participants.
- *Step 4: Have initial item pool reviewed by experts.* Convene a panel of experts on the topic of the scale to review the items. Their task will be to evaluate the relevance of items, their clarity and conciseness, and whether there is sufficient coverage of the construct to measure it adequately.
- *Step 5: Cognitive interviewing.* There are a variety of qualitative methods that can be used for this step. The goal is to learn how well respondents understand the items and how they formulate a response to them.
- *Step 6: Consider inclusion of validation items.* Depending on the context, it could be relevant to include items or scales capturing possible flaws or problems, such as social desirability or response biases. Other items or other scales could also be added for validation purposes.
- *Step 7: Administer items to a pilot sample.* Administer the items to a pilot sample that, ideally, is representative of the target population. The sample size should be as large as possible to estimate with enough preci-

Figure 1 ■ The five steps of the attitude scale development project



sion the relevant psychometric properties (e.g. item difficulty and discrimination, scale reliability).

- *Step 8: Evaluate the psychometric properties of the items and the scale.* Using the data from the pilot sample, examine the relation between the items (inter-items correlations), their descriptive statistics (mean, standard deviation, minimum, maximum), their discrimination power (corrected item-total correlation or item-rest correlation), and the scale's reliability (e.g. Cronbach's alpha coefficient).
- *Step 9: Optimize scale length.* Evaluate the compromise between reliability and scale length and ponder the cost-benefits of shortening the scale.

For the purposes of this teaching exercise we abridged these steps, combining them into five steps that covered the basics of the process. Teaching this process is a good opportunity to cover essential content related to any scale development, namely: item writing guidelines; classical test theory and modern psychometric models; reliability and item analysis.

Activity

The goal of this activity is to help students learn to develop an attitude scale using Likert's method. It uses a learning-by-doing approach (Reese, 2011; Schank, 1995; Schank et al., 1993) to facilitate the transition from theory to practice. Learning by doing is based on the idea that involving students in an authentic task facilitates learning. This idea is shared by many educational theories and approaches, such as situated cognition (Brown et al., 1989), experiential learning (Kolb, 2015), competency-based education (Tardif, 2006), and andragogy (Knowles, 1984). The proposed activity can also be viewed as a form of guided practice in the context of explicit instruction (Archer et al., 2011).

The activity is divided into five steps. Guided by the teacher throughout the semester, the students 1) choose and define an attitude object, 2) generate an item pool, 3) review the items and select the items to be included in the scale, 4) administer the scale to a sample of participants, and 5) evaluate the reliability of the scale using the collected data (Figure 1). Before each step, the students are introduced to the required theoretical content through lectures and readings.

Step 1: Choose and define an attitude object.

In class or as an assignment, ask the students for suggestions of attitude objects and choose one of them for the activity. An attitude object can be "any discriminable aspect of an individual's world" (Fishbein & Ajzen, 2010, p. 76), for example a political party, a brand, or a behaviour. Having all students work on the same attitude object facilitates class discussions and increases group participation. It also mimics the teamwork dynamics of developing a scale in the real world. For pedagogical reasons, the students must select an attitude object about which some attitude variability is expected in the general population: choosing objects or behaviours for which attitudes are expected to be highly skewed (i.e., highly favourable or highly unfavourable, such as attitudes towards slavery or Nazism) could result in low item and scale variability. The students

Table 1 ■ Summary of item writing guidelines (Aiken, 2002; DeVellis & Thorpe, 2021; Haladyna & Rodriguez, 2013)

Relevant for all participants.
Refer to the present rather than the past.
Not factual.
Responses should vary (item should not be endorsed by almost everyone or almost no one).
Simple, clear, and direct (item should not be interpreted in more than one way).
Only one idea per item.
Simple sentences (use as few words as possible).
Avoid negatively worded items.
Avoid double negatives.
Use simple, familiar words (avoid technical terms, jargon, and slang).
Avoid ambiguous words that can have more than one meaning.
Avoid ambiguous universals such as “always,” “never,” “all,” and “none.”
Avoid nonspecific adjectives or adverbs such as “many” and “sometimes.”
Words such as “only,” “just,” and “merely” should be used moderately.
Avoid leading or loaded items that suggest an appropriate response.

must also propose an attitude object that is relatively well known in the general population, rather than only in some population subgroups. Having a large target population will facilitate participant recruitment during data collection (step 4).

After choosing the attitude object, the students must provide a definition that circumscribes it in a clear and meaningful way. For example, if the attitude object is Apple’s Mac computers, it could be defined as encompassing Mac laptop and desktop computers. If the attitude object is a behaviour, define it using action, target, context, and time, as recommended by Fishbein and Ajzen (2010). For example, it could be buying (action) a Mac computer (target) at a speciality store (context) in the next six months (time).

Step 2: Generate an item pool.

In class or as an assignment, each student writes ten statements reflecting a favourable attitude towards the selected object and ten statements reflecting an unfavourable attitude. We suggest having half favourable and half unfavourable items to be in line with Fishbein and Ajzen’s (2010) recommendations and to encourage students to practice writing both item types. These statements can be cognitive (e.g., beliefs) or affective evaluative responses regarding the attitude object. For example, statements reflecting a favourable (+) or unfavourable (–) attitude towards Mac computers could be:

- *Mac computers are more reliable than other computer brands (+).*
- *Using a Mac computer is fun (+).*
- *Mac computers are too restrictive (–).*
- *For serious productivity work, Mac computers should be avoided (–).*

Step 3: Review the items and select the items to be included in the scale.

In class, ask the students to work in small teams (2–3 students) to review the quality of the items written in step 2 (presented anonymously) based on the standard writing guidelines summarized in Table 1 (Aiken, 2002; DeVellis & Thorpe, 2021; Haladyna & Rodriguez, 2013). When they have finished reviewing the items, ask each team to present the items they deem the best and to justify their choices. For each item, the other teams state whether they agree or disagree with the selection and explain why. At this point, the teacher introduces his or her opinion regarding the strengths and weaknesses of the item. Following the discussion, two decisions are possible: reject the item or keep it in the scale that will be pilot tested. Once all the items have been reviewed in class, identify the 20 best items: 10 items reflecting a favourable attitude and 10 items reflecting an unfavourable attitude. Apart from being well written, the retained items should be the most relevant to the attitude of interest in order to maximize content validity.[1]

Step 4: Pilot test the scale (data collection).

Ask each student to administer the scale to 10 participants: if you have a group of 10 students, you will have a sample of 100 participants. Create a database containing the responses of all participants. This database should usually contain one observation (i.e., participant) per line and one variable (i.e., item) per column similar to the one seen in Figure 2.

[1] Content validity is a source of validity evidence and is determined through the “analysis of the relationship between the content of a test and the construct it is intended to measure” (AERA, APA, NCME, 2014, p. 14)

Figure 2 ■ Example of a database containing the responses of participants on a Likert scale (response options: 1=*Strongly disagree* to 5=*Strongly agree*)

	A	B	C	D	E	F	G	H
1	Participant_ID	Item_1	Item_2	Item_3	Item_4	Item_5	Item_6	Item_7
2	1	4	5	4	4	5	5	4
3	2	5	4	5	5	5	5	5
4	3	4	4	4	3	5	5	3
5	4	4	4	4	4	5	5	4
6	5	4		5	3	5	4	4
7	6	4	4	4	4	4	5	5
8	7	4	4	4	4	5	5	4
9	8	4	4	4	4	5	5	5
10	9	4	4	3	4	5	5	4
11	10	4	5	4	4	5	4	4
12	11	4	4	4	4	4	4	4
13	12	4	4	5	4	4	5	5
14	13	5	4	4	2	4	4	3
15	14	4	4	5	5	4	5	5
16	15	4	4	4	4	4	4	4
17	16	3	4	3	2	5	4	4
18	17	5	4	5	4	4	4	5
19	18	4	4	4	4	5	4	4

Step 5: Evaluate the scale reliability using the collected data.

In class, connect your computer to a projector. Using the statistical software of your choice (e.g., SPSS, SAS, R, STATA), guide the students through the analyses necessary to evaluate the attitude items and scale. Have the students replicate these analyses on their own computers at the same time. These analyses can be done using classical test theory (CTT) and/or item response theory (IRT), depending on the course objectives. For this learning module, we will use CTT and nonparametric IRT using SPSS and EIRT, an open-source Excel add-in for CTT and IRT analyses (Valois et al., 2011). We chose CTT because of its popularity and nonparametric IRT using EIRT because it can easily produce item characteristic curves (ICC) and option characteristic curves (OCC) based on a model requiring a minimal set of assumptions (Sijtsma & Molenaar, 2002). During this exercise, guide the students through these steps:

Import the database containing all the participants' responses. In SPSS, use "File → Import data."

Look at the frequencies, missing values, and descriptive statistics for each item. In SPSS, use "Analyze → Descriptive statistics."

Deal with missing values if necessary. In SPSS, use "Transform → Replace missing values."

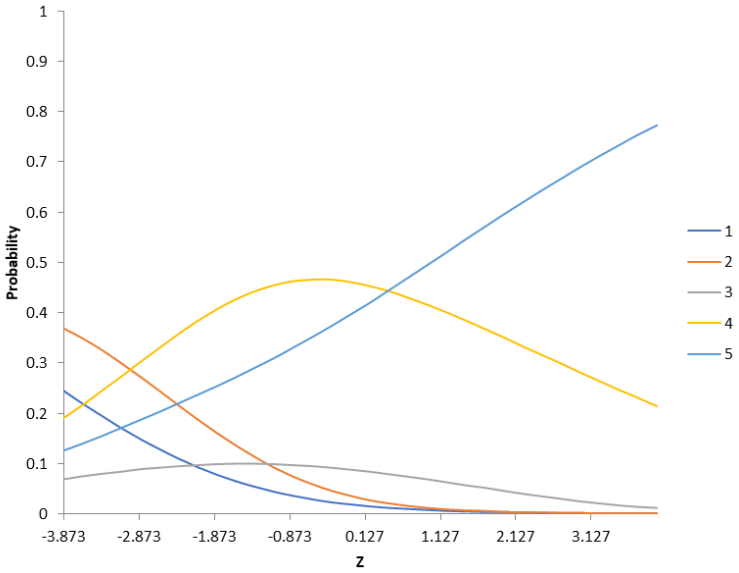
Reverse code negative items (i.e., items that reflect an unfavourable attitude). In SPSS, use "Transform → Recode into same variables."

Perform item and reliability analyses: In SPSS, use "Analyze → Scale → Reliability analysis." For pedagogical purposes, we suggest selecting Cronbach's alpha coefficient as it is by far the most popular reliability coefficient reported in the literature.

In EIRT (within Excel), launch the analysis assistant and follow the four steps. For model selection, use one of the two non-parametric IRT estimators (kernel smoothing or penalized marginal maximum likelihood estimator).

Inspect the item means and discrimination index (i.e., item-rest correlation) and their graphical representation, i.e., item characteristic curves (ICC) and option characteristic curves (OCC) in EIRT. First, items should not be too easy or too hard to endorse. In other words, their means should not be too close to the minimal and maximal values of the response scale. Second, item-rest correlations can be interpreted using Ebel and Frisbie's (1991) guidelines: <0.10 = poor discrimination; 0.10–0.19 = low discrimination; 0.20–0.29 = acceptable discrimination; 0.30–0.39 = good discrimination; and >0.40 = excellent discrimination. Third, ICCs should be monotonically increasing curves (often referred to as s-shape). In other words, there should be a positive, non-decreasing relation between the overall attitude score and the score on an item. Fourth and last, OCCs should progress in an ordered fashion (the more favourable the respondent's attitude, the higher the probability of endorsing a higher response option). See Figure 3 as an example, where the most popular response option for participants moves from 2 (*disagree*) to 4 (*agree*) to 5 (*strongly agree*) as their attitude score increases.

Figure 3 ■ Example of nonparametric option characteristic curves using EIRT for an attitude item (response options: 1=*Strongly disagree* to 5=*Strongly agree*)



Inspect the "alpha if item is deleted" values to see whether deleting an item would increase or decrease Cronbach's alpha.

Interpret the value of the scale's Cronbach's alpha. Usually, < 0.60 is poor/unacceptable, 0.60 to 0.69 is moderate/questionable, 0.70 to 0.79 is acceptable, 0.80 to 0.89 is good, 0.90 and higher is excellent. Note that very high values (> 0.95) can indicate redundancies.

Inspect the inter-item correlation matrix to determine whether there are any redundancies (correlations > 0.70) or pairs of items that are incoherent (low or negative correlations between them).

Calculate the attitude score using the items retained following the item and reliability analyses (i.e., create a variable that is the sum or average of the attitude items). In SPSS, use "Transform -> Compute variable."

Estimate the standard error of measurement: SEM = standard deviation for the total attitude score * (1 – reliability coefficient of the attitude scale)1/2. The larger the SEM, the less precise and unreliable are attitude scores. The SEM can be used to estimate a 68% confidence interval around a score. For example, with a SEM of 5.0, the 68% confidence interval for a score of 50 would range from 45 to 55.

Conclusion

This vignette presents an activity to help students learn how to develop an attitude scale using Likert's method. The strength of this activity is that it gives the students a hands-on project that mimics the real-world process of developing an attitude scale. It is flexible and can be adapted to a course's objectives: more or less emphasis can be put on the different steps, a different test theory and other statistical analyses can be used, and it can be shortened or enhanced depending on the context.

References

Aiken, L. R. (2002). *Attitudes and related psychosocial constructs: Theories, assessment, and research*. Sage Publications.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11–39). Springer-Verlag. doi: 10.1007/978-3-642-69746-3_2.

American Psychological Association. (2024). *Apa dictionary of psychology*. https://dictionary.apa.org/

Archer, A. L., Hughes, C. A., & Hughes, C. A. (2011). *Explicit instruction: Effective and efficient teaching*. Guilford Press.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, *18*(1), 32–42. doi: 10.2307/1176008.

Chu, H. (2024). *Research methods and design beyond a single discipline from principles to practice*. Routledge. doi: 10.4324/9781003021711.

Cooper, D. R., & Schindler, P. S. (2006). *Business research methods* (9th). McGraw-Hill.

De Cannière, M. H., De Pelsmacker, P., & Geuens, M. (2009). Relationship quality and the theory of planned behavior models of behavioral intentions and purchase behavior. *Journal of Business Research*, *62*(1), 82–92. doi: 10.1016/j.jbusres.2008.01.001.

DeVellis, R. F., & Thorpe, C. T. (2021). *Scale development: Theory and applications*. SAGE Publications.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Harcourt Brace Jovanovich College Publishers.

Ebel, R. L., & Frisbie, D. A. (1991). *Essentials of educational measurement* (5th edition). Prentice-Hall.

Erwin, P. (2001). *Attitudes and persuasion*. Psychology Press.

Fabrigar, L. R., MacDonald, T. K., & Wegener, D. (2005). The stucture of attitudes. In D. Albarracin, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 79–124). Erlbaum.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Addison-Wesley.

Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. Psychology Press.

Fortin, M.-F., & Gagnon, J. (2022). *Fondements et étapes du processus de recherche : Méthodes quantitatives et qualitatives* (4e édition). Chenelière éducation.

George, J. F. (2004). The theory of planned behavior and internet purchasing. *Internet Research*, *14*(3), 198–212. doi: 10.1108/10662240410542634.

Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its applications to health-related behaviors. *American Journal of Health Promotion*, *11*(2), 87–98. doi: 10.4278/0890-1171-11.2.87.

Guttman, L. (1944). A basis for scaling qualitative data. *American Sociological Review*, *9*(2), 139–150. doi: 10.2307/2086306.

Haladyna, T. M., & Rodriguez, M. C. (2013). *Developing and validating test items*. Routledge.

Hansen, T., Møller Jensen, J., & Stubbe Solgaard, H. (2004). Predicting online grocery buying intention: A comparison of the theory of reasoned action and the theory of planned behavior. *International Journal of Information Management*, *24*(6), 539–550. doi: 10.1016/j.ijinfomgt.2004.08.004.

Hrubes, D., Ajzen, I., & Daigle, J. (2001). Predicting hunting intentions and behavior: An application of the theory of planned behavior. *Leisure Sciences*, *23*, 165–178. doi: 10.1080/014904001316896855.

Knowles, M. S. (1984). *Andragogy in action. jossey-bass*.

Kolb, D. A. (2015). *Experiential learning: Experience as the source of learning and development* (2nd edition). Pearson Education.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, *140*.

Osgood, C. E. (1952). The nature and measurement of meaning. *Psychological Bulletin*, *49*(3), 197–237. doi: 10.1037/h0055737.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In *Communication and persuasion: Central and peripheral routes to attitude change* (pp. 1–24). Springer. doi: 10.1007/978-1-4612-4964-1_1.

Reese, H. W. (2011). The learning-by-doing principle. *Behavioral Development Bulletin*, *17*(1), 1–19. doi: 10.1037/h0100597.

Reinecke, J., Schmidt, P., & Ajzen, I. (1996). Application of the theory of planned behavior to adolescents' condom use: A panel study. *Journal of Applied Social Psychology*, *26*(9), 749–772. doi: 10.1111/j.1559-1816.1996.tb01128.x.

Schank, R. C. (1995). *What we learn when we learn by doing* (Technical Report No. 60). Southampton University. https://web-archive.southampton.ac.uk/cogprints.org/637/1/LearnbyDoing_Schank.html

Schank, R. C., Fano, A., Bell, B., & Jona, M. (1993). The design of goal-based scenarios. *The Journal of the Learning Sciences*, *3*(4), 305–345. http://www.jstor.org/stable/1466619

Sijtsma, K., & Molenaar, I. W. (2002). *Introduction to nonparametric item response theory*. SAGE Publications.

Tardif, J. (2006). *L'évaluation des compétences : Documenter le parcours de développement*. Chenelière-éducation.

Thurstone, L. L. (1928). Attitudes can be measured. the. *American Journal of Sociology*, *33*(4), 529–554. doi: 10.1086/214483.

Triandis, H. C. (1977). *Interpersonal behavior*. Brooks/Cole Publications.

Valois, P., Houssemand, C., Germain, S., & Abdous, B. (2011). An open source tool to verify the psychometric properties of an evaluation instrument. *Procedia - Social and Behavioral Sciences*, *15*, 552–556. doi: 10.1016/j.sbspro.2011.03.140.

Valois, P., Talbot, D., Bouchard, D., Renaud, J.-S., Caron, M., Canuel, M., & Arrambourg, N. (2020). Using the theory of planned behavior to identify key beliefs underlying heat adaptation behaviors in elderly populations. *Population and Environment*, *41*(4), 480–506. doi: 10.1007/s11111-020-00347-5.

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Extended activity metadata

Concept illustrated	Attitude measurement, Likert scaling	*Type of activity*	Learning by doing
Prerequisite	Classical Test Theory, reliability, item analysis, descriptive statistics, correlation	*Types of data*	Empirical (data collection needed)
Co-requisite	N/A	*Computation by*	SPSS and EIRT
Suitable class size	Small (ideally 15 or fewer)	*Duration*	Multiple classes during a semester