**EDUR 9131 Doctoral Research Methods**
Research Purpose and
Activity 1, Part 1: Scale Development

Purpose

The purpose of this activity, and study, is to collect data to test the model proposed in Figure 1. The model specifies seven independent latent variables (work/job autonomy, work stress, etc.), a dependent latent variable (life satisfaction), and two intervening latent variables (work/job burnout and job satisfaction). Thus, in this activity we will develop scales and a questionnaire to measure the specified latent variables, collect data with the questionnaire, and analyze the data to assess the nature and strength of the relations and predictive power of the independent variables. In short, we will execute the functional equivalent of a dissertation study.

Figure 1: Predictors of Job Burnout, Job Satisfaction, and Life Satisfaction
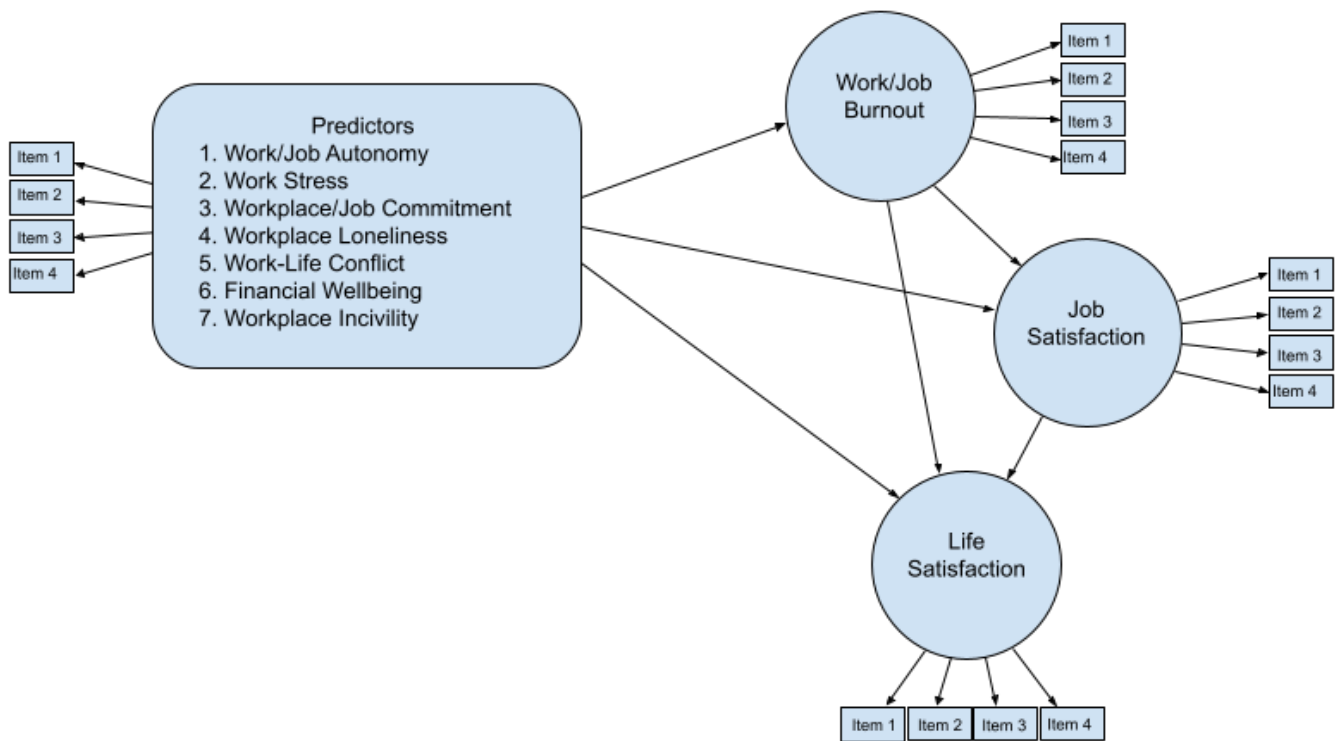
This activity will consist of three parts.

> Part 1: Scale Development
> > Students in EDUR 9131 will develop items and scales to measure each of the variables in Figure 1. Details of this part of the activity are described below.

> Part 2: Data Collection and Scale Validation
> > In the second part of this study, data will be collected via an electronic questionnaire from graduate students enrolled in other courses. These data will be used to assess evidence for reliability (internal consistency) and validity (both content and construct) of scores from each of the developed scales. Content validity will also be reassessed and recommendations for item revisions will be requested. Instructions for this part of the activity will be provided in a separate document.

Part 3: Data Analysis

Composite scores for each scale will be formed and used to assess the nature of the relationships among independent, intervening, and dependent variables in Figure 1. Both correlation and regression analyses will be used. Instructions for this part of the activity will be provided in a separate document.

Part 1: Item Development

1. Develop Items
   a. Each student will be assigned one of the latent variables depicted in Figure 1.
   b. Draft at **least 9 items** for your assigned latent variable. Details are explained below. Before submitting your items, please have someone critically review your items and provide feedback. Make revisions based upon this feedback before submitting your 9 items.
   c. Submit your draft items in the Activity 1 Part 1 Dropbox in Folio. Content of this submission follows.

   - First provide the **latent variable name** to which you have been assigned and a **brief description** of the latent variable **plus any dimensions** that should be included in the measure. Provide citations as needed. For example, if the latent variable was test anxiety, the description and dimensions might appear as follows.

        Test Anxiety is the fear one senses before or during important assessments and this usually occurs in two dimensions, physiological and psychological (Spielberger & Vagg, 1995). Physiological references physical reactions one may have when experiencing test anxiety such as sweating, upset stomach, headache, or nervousness, while psychological refers to cognition such as worry about failing, motivation, and concerns about being evaluated (Stöber, 2004).

   - Below the latent variable description, post **item wording** and indicate the **response scale** that should be used for each item (e.g., 1 = Not at all like me, 5 = Very much like me; 1 = Very Dissatisfied, 5 = Very Satisfied, etc.). For this activity, use a 5-point Likert-type scale like the examples above, but use whichever scale description wording seems best for your items (e.g., Strongly Disagree, Very Infrequently, Not at all like me, etc.), and you may change response scale options for different item (i.e., not all items must use the same response scale descriptions). Also, all steps on the response scale (1, 2, 3, 4, 5) must have unique descriptions. For example:

        1 = No or almost no anxiety
        2 = Slight anxiety
        3 = Some anxiety
        4 = Moderate anxiety
        5 = Major anxiety

   - **Do not plagiarize items** – borrowing words and ideas is acceptable but provide citations of sources used with your draft items. As a minimum, you must **develop at least four original items**; the remaining items can be reworded items found in the literature. Do not use exact wording of any items found. Identify which items you developed and which you reworded; below the reworded items include copies of the original wording (e.g., Reworded item: "I have an upset feeling when I face important tests." Original item: "Sometimes I have an upset stomach when taking tests.").

- **Two of the 9 items** developed for each latent variable must be **reverse worded**, i.e., **reversed polarity** or **reversed valence**. Reversing the meaning of items can be done by adding negatives, but this often leads to confusion with responses, so don't use negatives (e.g., not, no), instead, use antonyms or phrasing to reverse the meaning. See examples below for test anxiety items.

> Non-reversed
>> I feel my heart beating faster during important tests.
> Reversed
>> My heart remains calm and steady during important tests.

> Non-reversed
>> When taking an important test, I worry about the consequences of failing.
> Reversed
>> When taking an important test, I am usually confident I will do well.

- **Validity check item –** Develop and present one item that clearly captures the latent variable succinctly; this is an overall summary item that can be used as a validity check to determine how well the other items correlate with responses to this one item. Below are several examples of summary items, and their response scales, for the measure of test anxiety.

> Example 1
>> I tend to have anxiety when taking important tests.
>>> (1 = not true of me, to 5 = very true of me)
> Example 2
>> My level of anxiety before important tests is
>>> (1 = very low, to 5 = very high)
> Example 3
>> When taking tests, I tend to experience
>>> (1 = no, or very low, anxiety, to 5 = very high anxiety)

- **Diverse Wording** – When writing items attempt to provide diverse content on the variable assigned to you, for example, these two items, while reversed, overlap and offer nothing new, so only one would be used.

> My cat likes Friskies party mix snacks
>> vs.
> My cat dislikes Friskies party mix snacks

Both measure the same thing; the content is unchanged. In addition, critically evaluate wording of items and wording of response options to ensure they fit. For example, which response set fits better with this item?

       My cat likes Friskies party mix snacks
            1 = eats rarely
            2 = eats occasionally
            3 = eats frequently

       vs.

       My cat likes Friskies party mix snacks
            1= no, tends to dislike
            2 = shows some interest
            3 = shows much desire

- **Item justification** – Below each item provide a brief justification for why that item is included in the scale and which dimension it fits if multiple dimensions are modeled in your item development. Note that item justification is one of the more important components of content validity. For example, if measuring test anxiety, the following item might be included "I have an upset feeling in my body when I face important tests." Explain the theoretical rationale for including this item and dimension mapping. For example:

    > Spielberger & Vagg (1995) explain that those with high levels of test anxiety often report experiencing nervousness or an upset feeling. This item addresses that experience and fits with the physiological dimension of test anxiety.

- **Relationship Predictions** – Consider your assigned latent variable and the remaining nine latent variables in Figure 1. Using logic, theory, or research, make a **prediction about which 3 latent variables** are likely to be most strongly related to your assigned latent variable. A brief literature review of variables related to your latent variable will be helpful here, although you do not have to report this review. It is likely the literature you review to find additional measures of your latent variable will include related variables. While a literature review is not required, do provide citations to support your predictions and include a brief – one sentence – explanation. Include these predictions in your item draft submission. Relationship predictions will be used to assess evidence for construct validity of your items. Below are examples of variables that are expected to relate to test anxiety.
    a. Test Anxiety and Academic Self-efficacy – negatively related; logic suggest those with more academic confidence would have less anxiety, and prior research shows these two variables are negatively related (e.g., Roick, J., & Ringeisen, T. 2017. Self-efficacy, test anxiety, and academic success: A longitudinal validation. *International Journal of Educational Research*, *83*, 84-93.).
    b. Test Anxiety and Grades – negatively related; logically one would expect grades to be lower for those who suffer greater anxiety, especially if the anxiety debilitating (Rana, R., & Mahmood, N. (2010). The relationship between test anxiety and academic achievement. *Bulletin of Education and Research*, *32*(2), 63-74.).
    c. Test Anxiety and Distractibility – positively related; those who are more easily distracted during tests are more likely to have greater levels of test anxiety (Alting, T., & Markham, R. (1993). Text anxiety and distractibility. *Journal of Research in Personality*.).

- Lastly, include **references** of material used in development of your items (i.e., any scales or articles used from which item wording was selected). Google Scholar (https://scholar.google.com) is a good tool for finding published studies since it provides links to those studies with online documents.

The instructor will review draft items and provide feedback for revisions.

2. Revise Items

Once you have item feedback from the instructor, make revisions then submit all items (revised and unrevised) in the Activity 1 Part 1 Dropbox, and mark those 4 items you think are the best for measuring your assigned latent variable. In addition to those 4 items, also mark the overall summary item and that will make the 5th item in total to be used to measure your assigned latent variable. The instructor will review the new submission and provide suggested revisions if needed.

3. Electronic Questionnaire Construction

Once all items are submitted to the Activity 1 Part 1 Dropbox, an electronic questionnaire will be created. Google forms will be used to create the electronic questionnaire. All EDUR 9131 students will be given access to the questionnaire. Open the linked questionnaire and include your 5 items; remember, one must be the overall, summary item so it can serve as a validity check. Include both item and response scale in the questionnaire.

When entering response options in Google forms, provide coding number before response option, i.e.
- o strongly disagree, disagree, etc. becomes 1 = strongly disagree, 2 = disagree
- o adding these numbers makes it easier to convert text to numbers for data analysis after downloading from Google forms

4. Questionnaire Administration

After the questionnaire is constructed, it will be administered to students in the instructor's other classes. Once data are collected, we will proceed to Activity 1 Part 2 which will focus on item analysis, and reliability and validity assessment.

References

Spielberger, C. D., & Vagg, P. R. (1995). Test anxiety: A transactional process model. Taylor & Francis.

Stöber, J. (2004). Dimensions of test anxiety: Relations to ways of coping with pre-exam anxiety and uncertainty. *Anxiety, Stress & Coping*, *17*(3), 213-226.