Using Microsoft Excel to Calculate Content Validity Index (CVI)

and Content Validity Ratio (CVR): A Practical Approach

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Introduction

It is essential that the technical adequacy of instruments be established and reported in research, evaluation, and assessment methods. Technical adequacy takes the form of validity, reliability, and utility of use. Quality journals are not likely to publish research results using an assessment without psychometric instrument justification. Similarly, accreditation bodies necessitate programs, units, and universities to report the validity and reliability of their assessments. If the assessment is "home-grown," or developed by the institution, it is vital that these criteria are tested, assessed, and interpreted by those working on developing the assessments.

There is no question that the accreditation process is controversial, particularly among faculty members. Higher education faculty members have their assignments split among categories, and most often have some requirements for participating in teaching, scholarship, and service (Boyer, 1990). Lewis (2016) found faculty members might resist involvement in the accreditation process due to philosophical differences in their views of assessment, their perceived utility value of involvement, and time necessary to be part of the accreditation process. Although faculty members at liberal arts colleges and smaller universities typically make a smaller salary than those at research and medical universities (Park, 2012), the smaller colleges

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and universities are also often those with fewer resources supporting accreditation support at the program and unit levels. As such, faculty members at these universities and colleges are more likely to serve on unit and program-level assessment teams and be responsible for testing and interpreting any self-developed instruments. This is a time-consuming process, and faculty members themselves may be uninformed about how to do this.

In the field of Teacher Education, the major accreditation bodies, AAQEP and CAEP, require that validity of instruments be reported to justify data quality (AAQEP, 2021; CAEP, 2022), and, in many cases, the minimum acceptable validity type that must be reported is content validity (Chepko, 2016). For faculty members unfamiliar with statistics or the method itself, testing for content validity can seem daunting. The calculations can be tedious and time-consuming, and there are few resources available to make it easier. Manually entering numbers into the formulas on a calculator, and starting over in the case of small errors, is not a good use of time. If there was a program available for doing this, justifying the funds for purchasing it could be difficult in the current American higher education budgeting struggles.

Although there is an ethical expectation that faculty members do work that assists their programs and universities (Dressel, 1971), work on assessment teams often does not fall neatly into service, teaching, or scholarship (Lewis, 2016) and, thus, may be undervalued for promotion and tenure reviews. Manually computing values for establishing content validity is an undue burden for researchers and evaluators, and particularly for those volunteering their time on assessment and accreditation teams. For researchers and assessment teams who wish to use the Lawshe approach to establish content validity, I have developed a Microsoft Excel worksheet with formulas that will make the necessary calculations automatically. Since most faculty members already have access to Excel, this would not require any additional software purchases.

In this paper, I describe the Lawshe approach, setting up the Excel worksheet to calculate necessary content validity results, and interpreting and reporting the results.

Background

Evaluating instruments for content validity was defined by Lawshe (1975) as "the extent to which communality or overlap exists between (a) performance on the test under investigation and (b) ability to function in the defined job performance domain" (p. 566). In other words, content validity measures the extent to which instruments measure the vital aspects of the job. Instruments that can be tested with the Lawshe approach include "the items on a test, questions in an interview, or elements of a set of accreditation standards" (Wilson, Pan, & Schumsky, 2012, p. 197). To test content validity using the Lawshe approach, one selects an expert panel (Content Evaluation Panel) on the subject to review the instrument. The experts have advanced knowledge of the aspects of performing the job well. Typically, a Content Evaluation Panel of 5-10 members is acceptable; although content validity can be calculated with up to 40 panel members, greater than 10 members is typically unnecessary (Lynn, 1986).

Content validity measures the consensus of the experts agreeing that items on the instrument are essential to measuring constructs. The Content Evaluation Panel members are provided a copy of the instrument in question and then rate each of the items on the instrument with a Lawshe rating scale. For each item, they mark one of three scale points, according to whether the item represents a knowledge or skill essential for the job function or cognitive task it is intended to measure. They may mark each item as *Essential*; *Useful, but not Essential*; or *Not Necessary*. If there is a consensus among experts that the item is essential for measuring what the item intends, the item is said to have some level of content validity. If they disagree, the content validity of the item would be in question. The more disagreement about the essentialness of an

item, the less valid the item may be (Lawshe, 1975). As an aside, I highly recommend including additional space for written comments or subsequent interviews with the Content Evaluation Panel members to gain a deeper understanding of their ratings.

To examine the content validity of each item on an instrument, a formula was proposed by Lawshe (1975) and confirmed by later researchers as a generally accurate method of calculating and interpreting content validity results (Ayre & Scally, 2014). The value is called the Content Validity Ratio (CVR), which is a direct linear transformation of the number of raters agreeing an item is *Essential.* The results of the CVR can help determine which items should be revised or removed from the instrument. The formula is:

$$\text{CVR} = \frac{n_e - \frac{N}{2}}{\frac{N}{2}}$$

Here, n_e is the number of panel members indicating an item is *Essential*, and N is the total number of panel members responding to an item (regardless of their rating). This formula may be computed using a calculator, but for instruments with a large number of items, and/or Content Evaluation Panels with a large number of members, it is a time-consuming process with opportunities for calculation errors. In examples provided by Lawshe (1975), there may be hundreds of items on a single observation instrument for job performance.

Another component of content validity in the Lawshe approach is Proportions Agreeing Essential (PAE). The PAE represents the proportion of experts who rated an item as *Essential* out of the total number who rated the item. Although it is not as strong an indicator of content validity as CVR, it may give some indication of the content validity of items. It is calculated using the formula (Lawshe, 1975):

$$\text{PAE} = \frac{n_e}{N}$$

Here, n_e is the number of panel members indicating an item is essential, and N is the total number of panel members responding to an item, regardless of their rating. This is another formula that is easily calculated by hand, but, again, may be quite time-consuming and tedious.

A final statistic, and sometimes the only statistic, that is reported when using the Lawshe approach is the Critical Validity Index (CVI). The CVI is the estimated content validity of all combined items (i.e., the entire instrument). Lawshe (1975) operationally defined it as, "the average percentage of overlap between the test items and the job performance domain" (p. 569). In other words, it is the overlap between the tasks required to perform a job well and the tasks of the job as measured by the instrument. Lawshe and others (such as Gilbert & Prion, 2016) recommended calculating CVI using the mean CVR of all final items included on the instrument. The CVI of instruments can be calculated as:

$$\text{CVI} = \bar{x}(I_{CVR})$$

This formula represents the mean ($\bar{x}$) of all individual item CVRs (I_{CVR}). It is important to note that in the Lawshe approach, weighting of items may not be necessary. Each item is a discrete rating; whether a task on an instrument represents only a small portion of the total job, if it is still an essential task, the CVI is typically calculated without weighting (Lawshe, 1975). This formula, if computed by hand, is often an arduous task, due to inputting each item CVR in a calculator, which are in decimal form and typically rounded to the hundredths place.

Interpreting Results

For determining content validity of items, CVR values can be compared against established thresholds by generally accepted literature sources. Validity guidelines established by CAEP (Chepko, 2016) and Lawshe (1975) support the claim that any item with over 50% reviewer agreement of an *Essential* rating (or, PAE = .50) does maintain some level of content

validity. However, more sophisticated statistical analyses has concluded that the CVR value is a more accurate measurement of content validity.

The CVR values range from –1, which represents a perfect disagreement (or, no panel members mark an item as *Essential*) to +1, which is a perfect agreement (all panel members mark an item as *Essential*). Ayre and Scally (2014) constructed a table of acceptable CVR values, similar to that originally proposed by Lawshe (1975), which may be used as a comparison for acceptable item CVR according to the number of experts on the Content Evaluation Panel (see their publications for the complete tables).

The number of Content Evaluation Panel members determines the level of acceptable CVR values. If using up to seven Content Evaluation Panel members, all members must agree that an item is essential for it to demonstrate acceptable content validity (PAE = 1, CVR = 1.00; Ayres & Scally, 2014). However, if using 20 panel members, only 15 must agree that an item is essential in order to meet the content validity criteria (PAE = .75, CVR = .500; Ayres & Scally, 2014). This is simply explained because it is far more difficult to get larger groups of experts to agree on a single concept than it is a smaller group.

After calculating the item CVRs, any items that do not meet the threshold should be revised and retested or removed from the final instrument. Once items that have not demonstrated CVR are deleted, the mean of individual item CVRs is then calculated to determine the CVI. Some recommend that an acceptable CVI for an instrument is .70 or greater (Tilden, Nelson, & May, 1990). Some scholars, such as Polit, Beck, and Owen (2007) recommend that any CVI value of .78 demonstrates instrument validity, or more stringent thresholds estimate an acceptable CVI as .80 (Davis, 1992). Obviously, a greater CVI is preferred, although if using a small panel of seven or fewer members, the CVI must theoretically

be close to 1.00 to be considered valid (since any individual item with a CVI less than that should have been deleted), while a panel with 20 members would demonstrate a lower CVI, but still be considered valid, due to the lower CVR threshold requirement with larger panels.

The use of the Lawshe approach is not without critics. Beckstead (2009), among others, captured the problematic nature of content validity and the Lawshe approach. Although it is beyond the scope of this paper to discuss the statistical and methodological criticisms, they are not without merit. I recommend reading his and others' critiques before embarking on content validation using the Lawshe approach, and carefully consider the issues raised, including "the statistical model underlying interrater agreement, the collapsing of response categories, the correction for chance agreement among raters, and the age-old philosophical problem of induction" (Beckstead, 2009, p. 1277). If you choose to pursue the Lawshe approach as a method for establishing content validity, the calculations can be done quite easily using Microsoft Excel. Next, I will explain how to set up an Excel worksheet with headings and formulas to compute PAE, CVR, and CVI. This has not been tested with other spreadsheet software programs.

Setting Up the Workbook

I recommend setting up each worksheet in Excel using headings. Each of the formulas presented here works under the assumption of including a first row of headings (Row 1), as noted below. Each of the headings are simply recommendations and will not change the result of any of your analyses. See Figure 1 for a screenshot of the headings as they are described here.

Column A: Item. Under this heading in Column A, you can type the number, code, or description of each item on your instrument. Examples may include: Reading Comprehension 1 (Row 2), Reading Comprehension 2 (Row 3), and so on. What you label your items in each row is only important to you as you interpret the results but keep two things in mind. First, you

should label them with something that allows you to quickly compare the CVR result to the actual item on the instrument, so ensure it has a meaningful label. Second, if you assign them a number or arbitrary code, make sure you create a codebook (either digitally or by hand) that allows you to remember which item is represented by the number or code. For practical reasons, it is almost certainly easiest if you enter the items in the order they are presented on the instrument itself.

Column B: Essential. Under this heading in Column B, you will be typing the total number of *Essential* ratings given by a Content Evaluation Panel for each item. On the first item (Row 2), for example, you will enter 5 if the total number of experts who indicated that item to be *Essential* totaled five. With this column and the subsequent two (Columns C and D), you have two practical options. If you have a small number of raters, you can manually count the number of *Essential* ratings for each item and input that number in this column. This would be relatively easy to do with five or fewer raters. With more than five raters, I recommend the options outlined in Appendix A, which describe the steps to set up a second worksheet in your Excel file, input each item and rater manually, and create sums of the three rating options with a column for rater comments, if they are present. Simply, this option will likely save you time and energy of manually calculating scores, as well as eliminating errors that come from manually counting (or "eyeballing") the total ratings for each item. Additionally, it allows you to organize and store each panel member's ratings and comments within your workbook. This can easily be completed by a research assistant, if available, to expedite the analysis.

Column C: Useful. Under this heading in Column C, you will be inputting the number of total *Useful* ratings for each item. The same directions from the *Essential* category apply to this

and the following column – there are ways to input each item from each rater and calculate the total sum of ratings in Excel (again, see Appendix A).

Column D: NotEssential. Under this heading in Column D, you will be inputting the total number of *Not Essential* ratings for each item. You can label this column as two words if you wish. I prefer a single word with no spaces because I work with SPSS, and it makes it much easier to import data from Excel to SPSS, if you later choose, when they are labeled this way. The SPSS software will not accept variable names with spaces between words.

Column E: CVR. Under this heading in Column E, you will enter the formula for calculating CVR.

Column F: PAE. Under this heading for Column F, you will enter the formula for calculating PAE.

<div align="center">

Writing Item Content Validity Formulas

</div>

Writing CVR Formula

Excel can automatically calculate the CVR formula by entering the following equation in Column E, Row 2 (or, cell E2):

`=(B2-((B2+C2+D2)/2))/((B2+C2+D2)/2)`

This formula, as all presented in this paper, has no spaces. It must be entered as written, including the equal sign. After entering this formula, hit Enter. When you have entered the formula, you will see a yellow error icon on the left side, which is a Divide by Zero error; ignore this. Once you enter data, this error will take care of itself. To make the worksheet calculate CVR for every item, you will notice a blue box appear when you click on cell E2. Click that blue box and drag down Column E until you have reached the total number of items on your instrument. For my example, I have 39 items, so I would drag the blue box down to row 40 (remembering, again, that the first row is the headings). Figure 2 shows both the yellow icon

(left) and the blue box (bottom right) that you should see once you have entered the CVR formula.

Writing PAE Formula

The PAE, or Proportion Agreeing Essential, is the formula for calculating the percentage of respondents rating an item *Essential* out of the total number of raters for the item. This is a relatively easy calculation to do manually since it represents the percentage of raters out of the total who indicated an item was *Essential*. For example, if eight out of ten experts rated an item *Essential*, you would calculate it as: 8/10, or .80 (80%). However, Excel will calculate this automatically, if you enter this formula in Column F, Row 2 (cell F2; under header PAE):

```
=B2/(B2+C2+D2)
```

After entering this formula, hit Enter. Similar to the CVR formula, once you have entered this formula in Row 2, you can click on the cell F2, click the blue box that appears in the lower right corner of the cell, and drag it down the column through the total number of items you have on your instrument. For this example with 39 items, I would, again, drag it down to row 40.

<div align="center">

Writing Instrument Content Validity Formulas

</div>

Writing CVI Formula

Excel will also calculate CVI from the results of individual items' CVRs. This formula should be entered into column E after the final item (the row just after the lowest row you dragged the CVR formula to), and the numbers must be adjusted to the number of items you are testing. Before explaining this, I must say that I prefer creating an array formula. If you do this, it will calculate the instrument CVI as each item is entered, which will be important to show you a running count of the CVI, and will also let you delete items in the worksheet and will re-calculate the CVI without any opportunities for errors from non-numeric calculations. The following formula can be entered in column E to calculate CVI:

```
=AVERAGE(IF(ISERROR(E2:E40),"",E2:E40))
```

Depending on the number of items on your instrument, you may need to modify the E40 in the formula. In the formula, the E2 and E40 represent a calculation of the average (mean) of each CVR in your item. Think of the colon between the two numbers as asking Excel to calculate the average of all cells in E2 *through* E40. If you have a different number of items on your instrument than the examples described in this paper, your E2 will stay the same, but the E40 may need to be higher or lower. Since I dragged my CVR and PAE formulas down to row 40, I would enter this exact CVI formula in the next row (cell E41). It will do you no harm to have extra rows – if you have 20 items and followed my arbitrary example of dragging your CVR and PAE formulas to row 40, you can still enter the CVI formula as written in row 41, and none of the calculations will be affected. If you dragged the formulas to row 33 because you had 32 items you are testing, you could change both of the E40s in the formula to E33 and put this formula in the row below (cell E34).

The formula I have written is called an array formula. An array formula, in Excel, is one that can perform multiple calculations in an array of results. After you input the formula, you must simultaneously hit Control, Shift, and Enter. If you do not enter it as written (or modified, as described above) or do not hit Control, Shift, and Enter, Excel will not calculate the mean of the CVRs, since any remaining cells with formulas will cause an Average Function Error. This is due to the inability of Excel to interpret the extra formulas in the cells in row E as numbers. Entering the formula as written and performing the steps outlined above eliminates this error.

Writing Average PAE Formula

If you would like to report the average (mean) PAE from raters on all items on your instrument, Excel can calculate that. In the row below the PAE column (column F), enter:

```
=AVERAGE(F2:F40)
```

Vincent Genareo, Ph.D., Salisbury University, 2023

Similar to the CVI directions, you may need to adjust the F40 number, depending on how many items you have included on your instrument.

Example

Now that I have explained the headers and formulas that can be entered to calculate CVR, let me give you a short example. In this abbreviated example, five raters responded to a Lawshe rating of three items on an instrument. The raters responded as such:

Table 1. Raters' Responses to Three Instrument Items

	Item 1	Item 2	Item 3
Rater 1	Essential	Essential	Not Necessary
Rater 2	Essential	Essential	Useful, Not Essential
Rater 3	Essential	Useful, Not Essential	Useful, Not Essential
Rater 4	Essential	Essential	Not Necessary
Rater 5	Essential	Essential	Useful, Not Essential
Total	5 Essential	4 Essential, 1 Useful	3 Useful, 2 Not Necessary

Here, I would create three item rows, and enter the number of ratings for each item. Figure 3 shows how the data would be entered using a modified version of our example worksheet. Notice that I included the label of the final row, Total, which simply tells me it is the average (mean) of the CVR and PAE calculations. While it is not necessary to call the final row Total, it may assist you with visual interpretation. In this example, since there were only three items, I adjust the CVI formula in the Total row to read:

```
=AVERAGE(IF(ISERROR(E2:E4),"",E2:E4))
```

Notice that the E40 in the original formula is now changed to E4 in both locations, since I am only asking Excel to calculate the average from cells E2 to E4. Similarly, the PAE formula now reads:

```
=AVERAGE(F2:F4)
```

I only want to calculate the three PAE items in cells F2, F3, and F4, so it is modified to calculate those three (`F2:F4`).

Once the data are entered, the Excel formulas give us the outputs for each item (Item 1 CVR = 1, PAE = 1; Item 2 CVR = .6, PAE = .8, and Item 3 CVR = -1, PAE = 0). In this example, Item 1 has demonstrated content validity using the Lawshe approach. I would likely delete Items 2 and 3, since they did not meet the CVR thresholds for ratings with three experts on the Content Evaluation Panel (Ayre & Scally, 2014). These would require 100% agreement of *Essential*, and they did not meet this. This should be done prior to reporting the final CVI, but for the purpose of providing an example of the formula calculations using the Excel formulas I developed, I left them in. The instrument CVI is .2 and the mean PAE is .6, which would not be close to demonstrating content validity (recall that it is typically acceptable for an instrument to have a CVI between .70 and .80).

It is important to note that most researchers, such as Gilbert and Prion (2016), recommend that all item-level CVR values of 1 should be converted to .99 prior to calculation. To do this, you can manually change the number in each of the row where CVR computes to 1 (such as it did in Item 1 of this example), by typing the number .99 in its place, and the CVI formula will recalculate accordingly (even though the results will be negligible). I also recommend you document this change (1 to .99) when you report the results. For simplicity's sake, I did not do this in this example, but I would modify those values and report the subsequent CVI in reports or studies.

Reporting Results

The amount of information you include about your instrument depends on the purpose of your documentation. If you are reporting the technical adequacy or development of an

instrument, you may want to include development about the items and constructs and information about the item-level CVR values. Typically, in articles where instrument validity is important to report, but is not the focus of the article, we often see a justification of the Lawshe method, a brief description of the expert raters, their process of rating and returning the scores, and the instrument CVI.

When it is required to report the item-level CVRs (such as white papers, development papers, or technical reports), I place the full item-level results in a table. While this may be a journal preference, typically all PAE, CVR, and CVI values are rounded to the hundredth place, and CVR and CVI values that compute to 1 are often converted to .99. I table results, such as Table 2, including the raw number of expert ratings of each item, the PAE, the CVR, and a source to which I compare the CVR threshold as having met or not met the contentment validity guidelines.

Table 2. *Results of Content Evaluation Panel Rating of Reading Comprehension Assessment*

Item	N_e	N_u	N_n	PAE[a]	CVR[b]	Ayre & Scally
Comprehension 1	10	-	-	1.00	.99	met
Comprehension 2	9	1	-	1.00	.80	met

Note. n_e = number of panel members indicating an item is Essential. n_u = number of panel members indicating an item is Useful, but not Essential. n_n = number of panel members indicating an item is Not Necessary.
[a]PAE = Proportion Agreeing Essential (*n*). [b]CVR = Content Validity Ratio.

Depending on the purpose of the analysis, you may want to document the historical development of the instrument. You can do this by reporting items that did not meet the CVR threshold and any changes you made to the instrument based off of pilot results using the Lawshe approach. If you achieved unacceptable item results and revised wording or content, you might consider including columns for items before and after the revisions based on multiple content validity rounds. In Table 3, I demonstrate tabling information about the instruments' content

validity. In Round 1 (the shaded columns), the items did not meet CVR threshold. Using expert

reviewers' comments, the items were revised and another round of expert reviews were

conducted using the Lawshe method. These items met the threshold in the second round and

were included on the final instrument and in the final CVI calculation.

Table 3. *Results of Content Evaluation Panel Ratings, R1 to R2*

Item	R1_PAE[a]	R2_PAE	R1_CVR[b]	R2_CVR	R1_CV	R2_CV
Comprehension 3	.65	.90	.30	.80	-	met
Comprehension 4	.73	.90	.46	.80	-	met

Note. n_e = number of panel members indicating an item is Essential. n_u = number of panel members indicating an item is Useful, but not Essential. n_n = number of panel members indicating an item is Not Necessary.
[a]R1_PAE = Round 1 Proportion Agreeing Essential (*n*). [b]R_1CVR = Round 1 Content Validity Ratio.

Typically, when using the Lawshe approach, the most essential content validity result to

report is the instrument CVI. This should be reported in articles using self-developed

instruments, or any document in which it is important to establish the validity of the instrument

you use to gather data. I include the CVI, untabled, in the narrative, and compare its value to

established content validity thresholds (see Davis, 1992 and Tilden, Nelson, & May, 1990). This

is a single value, so putting it in a table is generally unnecessary.

Conclusions

It is essential to establish content validity for psychometric analysis of instruments and

assessments. The Lawshe method is one way of doing so that is generally accepted in instrument

psychometric reporting, and the resulting CVI is an acceptable validity coefficient for

demonstrating content validity according to many accreditation bodies. While the CVR and CVI

formulas are not difficult to compute by hand, they require care to detail and time on the part of

the assessor, and are, in my opinion, an undue burden on otherwise busy faculty members who

are on assessment or accreditation teams. Even researchers, with greater resources, can benefit from using the formulas presented here in their calculations. They can be easily entered and reported by research assistants and minimizes nearly any calculation errors that might otherwise occur when done manually.

There are no readily available online calculators, nor are there easy directions for using more complex data analysis software to perform the formula calculations required in the Lawshe approach. Microsoft Excel can be easily transformed into a vital tool for instrument validation. Using the directions provided in this paper, anyone can easily calculate and report essential content validity results. With very little advanced programming, and very little knowledge of Excel formula writing, departments or research teams could use these directions to set up templates available for calculating the essential formulas in the Lawshe approach.

The purpose of this paper was not to dive deeply into the theoretical underpinnings or criticisms of the Lawshe approach, nor was it to compare the Lawshe approach with other forms of content validity testing. Before engaging in this work, I highly recommend exploring the essential readings that were cited throughout this paper to further investigate if the Lawshe approach is appropriate for your needs. To obtain a Microsoft Excel template with a sheet for entering and calculating individual instrument numbers (individual item data entry), and a sheet including all formulas as described in this paper, please contact me at the email provided.

Resources

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Figure 1. Headings.

	A	B	C	D	E	F
1	Item	Essential	Useful	NotEssential	CVR	PAE

Figure 2. Formula.
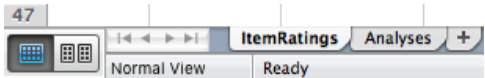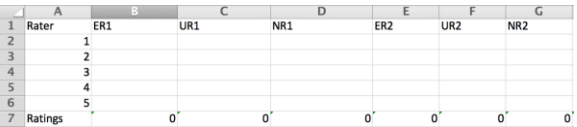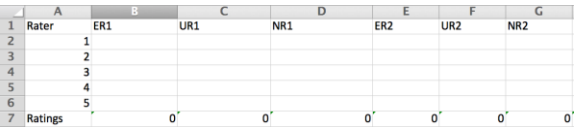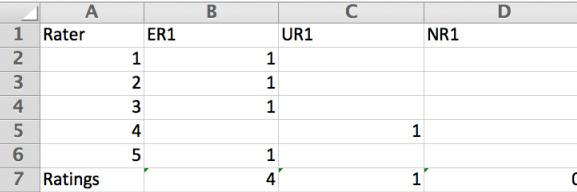
D	E	
NotEssential	CVR	
	#DIV/0!	

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Figure 3. Example Data Inputs

	A	B	C	D	E	F
1	Item	Essential	Useful	NotEssential	CVR	PAE
2	Item 1	5	0	0	1	1
3	Item 2	4	1	0	0.6	0.8
4	Item 3	0	3	2	-1	0
5	Total				0.2	0.6

Appendix A

Creating a Worksheet to Compute Item-Level Total Ratings

Create a new Excel file, or insert a new sheet in your current file by clicking the lower left + box. I created one within the file I discussed, and named it "ItemRatings." The other sheet, with CVR, PAE, and CVI formulas, is in the Analyses sheet, which lets me organize all of my work in one file.	
Create a row of headings, including Rater, ER1, UR1, NR1, etc. The "Rater" heading let you enter item-level data of each rater. ER stands for *Essential* Rating; UR stands for *Useful, but not Essential* Rating, and NR stands for *Not Essential* Rating. I have created another set of these (ER2, UR2, NR2), which represent the second item. If you have 20 items, you would create and label 20 sets of three. Under the raters, I created five rows, each for each rater (assuming there were five raters of this instrument). For 10 raters, create 10 rows.	
Create a code in the final row that will calculate the total number of ratings. For ER1, the code is: `=SUM(B2:B6)` Hit Enter. Click the blue box in the bottom right corner of that cell, and drag it across the row to the right. It will create a SUM formula for each rating of each item. Adjust the B6, depending on the number of raters (for 10 raters, change it to B11).	
Now you, or a research assistant, can enter the ratings of each expert for each item. In the picture to the right, you see that you would enter the number 1 in the ER1 column (Column B) if the rater gave item 1 an *Essential* rating. There is no need to enter zeroes for other columns. In this example, Raters 1, 2, 3, and 5 rated the item as *Essential*, while Rater 4 rated it as *Useful, but not Essential.* For each item, only one of the three columns (ER, UR2, NR) would a number 1 in its corresponding rating. You would then proceed to enter the ratings for Item 2 (Columns E, F, G labeled as ER2, UR2, and NR2) and so on.	
After items are entered, transfer the total ratings (in this example, Row 7 with the SUM formulas) in the other sheet, as described in this paper.	

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