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On Quantitizing

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Abstract

Quantitizing, commonly understood to refer to the numerical translation, transformation, or conversion of qualitative data, has become a staple of mixed methods research. Typically glossed are the foundational assumptions, judgments, and compromises involved in converting disparate data sets into each other and whether such conversions advance inquiry. Among these assumptions are that qualitative and quantitative data constitute two kinds of data, that quantitizing constitutes a unidirectional process essentially different from qualitizing, and that counting is an unambiguous process. Among the judgments are deciding what and how to count. Among the compromises are balancing numerical precision with narrative complexity. The standpoints of “conditional complementarity,” “critical remediation,” and “analytic alternation” clarify the added value of converting qualitative data into quantitative form.

Keywords

quantitizing; qualitative data; mixed methods research

Quantitizing, commonly understood to refer to the numerical translation, transformation, or conversion of qualitative data, has become a staple of mixed methods research (e.g., Boyatzis, 1998; Greene, 2007; Onwuegbuzie & Teddlie, 2003; Teddlie & Tashakkori, 2006). Pragmatic and ecumenical impulses, and the advent of computerized software programs to manage both qualitative and quantitative data, have served to promote a largely technical view of quantitizing. Moreover, the rhetorical appeal of numbers—their cultural association with scientific precision and rigor—has served to reinforce the necessity of converting qualitative into quantitative data. Typically glossed, however, are the foundational assumptions, judgments, and compromises involved in converting qualitative into quantitative data and whether such conversions advance inquiry. In this article, we address these foundational aspects of quantitizing. We aim to show that such conversions “are by no means transparent, uncontentious, or apolitical” (Love, Pritchard, Maguire, McCarthy, & Paddock, 2005, p. 287), nor even confined to mixed methods research. Although we argue that quantitizing always entails qualitizing, we emphasize quantitizing in this article. (We plan to emphasize qualitizing in another article.)

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The Nature of Data

To talk about converting qualitative into quantitative data is to assume that two kinds of data (qualitative and quantitative) exist and that the line between qualitative and quantitative data is “permeable” (Collins & Dressler, 2008, p. 365). In contrast is the view that there is only one kind of data. Kerlinger reportedly once asserted that there was no such thing as qualitative data—that is, that “everything is either 1 or 0” (Miles & Huberman, 1994, p. 40)—whereas Berg (1989, p. 40) asserted that there was no such thing as quantitative data, that “all data are basically qualitative.”

Foundational to whether data can be characterized as qualitative or quantitative are different understandings of data. The most prevalent conception of data is as what is given, or as what exists out there awaiting collection and analysis. Commonplace references to raw data, data collection, and data-based research reflect this view of data as the uninterpreted (i.e., uncooked) entities that precede and are the objects of analysis, and without which there would be nothing to analyze. Countering the data-as-given view is the understanding of data as the product of a move on the part of researchers to make something over into data. Here, *data* constitutes researchers’ “abstracted representations” of phenomena (Valsiner, 2000, p. 108). As Wolcott (1994) observed

Everything has the potential to be data, but nothing *becomes* (italics in original) data without the intervention of a researcher who takes note—and often makes note—of some things to the exclusion of others. (pp. 3–4)

This understanding of data-as-taken, as opposed to data-as-given (Lanigan, 1994), depicts data as already something “constructed” (Valsiner, 2000, p. 100) by researchers. Accordingly, the first data conversion is not from one kind of data to another (e.g., qualitative → quantitative) but rather from something experienced to data: when researchers decide that some things, but not others, can serve as evidence, or the foundation, for the study of a target phenomenon. Only after this first conversion can the second conversion occur when researchers decide whether the target of investigation is best represented by numbers (i.e., experience-quantitized), or words, visual displays, or some other form (i.e., experience-qualitized). Qualitative and quantitative data are not so much different kinds of data as these data are experiences formed into, for example, words or numbers, respectively.

Definition, Site, and Purposes of Quantitizing

There may be many things referred to as quantitative going on within the confines of an empirical study. The words *qualitative* and *quantitative* are used to refer to a wide variety of research entities from paradigms and perspectives to data collection and analysis techniques. *Quantitizing*, however, refers to the process of assigning numerical (nominal or ordinal) values to data conceived as not numerical (or, following the previous discussion, to experience formed into words, visual displays, or something else conceived as qualitative). The not-numerical data typically referred to are segments of text in the form of written transcripts or field notes produced from interviews or participant observations that were themselves formed to accommodate the analyses planned (Emerson, Fretz, & Shaw, 1995; Poland, 2002). The method used to accomplish this process is usually a variation of content, constant comparison, or domain analyses (e.g., Charmaz, 2006; Hsieh & Shannon, 2005; Spradley, 1979), whereby a priori and/or data-derived codes are attached to segments of text and numerical values are then assigned to those codes.

Quantitizing is not confined to mixed methods research, nor does mixed methods research necessarily entail quantitizing. Indeed, whether quantitizing is viewed as a component or indicator of mixed methods, as opposed to any other kind, research is often a matter of

preference and positioning. For example, ethnographic research is inherently multimethod in that it may entail a diverse array of qualitative and quantitative data collection and analysis techniques (LeCompte & Schensul, 1999). Yet the mixed methods research label may be more appealing to peer review and other audiences less familiar with ethnography or with ethnography as including quantitative approaches. For some research constituencies, any combination of words with numbers merits the term *mixed methods*, even simple frequency counts of themes or of participants expressing any one theme. For some research constituencies, quantizing cannot, by definition and methodological imperative, be a component of qualitative research. *Journal of Mixed Methods Research* readers will be familiar with the terminological debates concerning what entities are properly encompassed by the mixed methods research label and with the epistemological debates about what distinguishes qualitative from quantitative research and single-method from mixed methods research (e.g., Greene, 2007; Plano Clark & Creswell, 2008; Tashakkori & Teddlie, 2003).

In qualitative studies (i.e., in studies consisting only of what are generally considered to be qualitative modes of sampling, data collection and analysis, and interpretation), the quantitative conversion of qualitative data is done to facilitate pattern recognition or otherwise to extract meaning from qualitative data, account for all data, document analytic moves, and verify interpretations (Miles & Huberman, 1994; Ryan & Bernard, 2000; Sandelowski, 2001). Quantizing here is done to form qualitative data in ways that will allow analysts to discern and to show regularities or peculiarities in qualitative data they might not otherwise see or be able simply to communicate, or to determine that a pattern or idiosyncrasy they thought was there is not. Quantizing here may be seen as one way to know “mess” (Law, 2004) in that it serves as one means to manage the confusion of meanings and even disorder that characterize the data produced from open-ended and minimally structured data generation techniques.

In mixed methods research, the conversion of qualitative into quantitative data may be done for the same reasons as well as to put qualitative data into a form amenable to statistical assimilation with other data understood to be already quantitative: that is, produced from what are generally conceived to be quantitative data collection procedures (e.g., standardized instruments) and analyzed quantitatively (descriptive and inferential statistics). Although there is still debate concerning what mixing actually entails in mixed methods research (e.g., Moran-Ellis et al., 2006), the conversion of qualitative into quantitative data for the purpose of combining it with a quantitative data set seems to exemplify mixing as it enables the fusion or merger of data sets, not merely their juxtaposition with each other or parallel use (Driscoll, Appiah-Yeboah, Salib, & Rupert, 2007). The distinction drawn here is between the linking of diverse data sets that stay diverse—that is, stay what they are—and the assimilation of one data set (in the case of quantizing, a qualitative data set) into the other (a quantitative data set) to eliminate diversity, that is, to produce only one kind of data (a quantitative data set).

The purpose of quantizing in the latter instance is to answer research questions or test hypotheses addressing relationships between independent (or explanatory or predictor) variable(s) and dependent (or response or outcome) variable(s) constructed from both qualitative and quantitative data sets. The hypothesis in question may be addressed directly by consideration of the effect of a variable generated by quantizing or indirectly by treating that variable as a covariate, mediator, or moderator of the effect of some other variable. The variable generated by quantizing may also be the dependent variable for the hypothesis in question. A hypothetical example of a research question of this kind is “Does type of illness narrative (with types constructed from interview data and assigned values of 1 = *encompassing*, 2 = *distancing*, 3 = *denying*) predict physical functioning and mental health outcomes (high scores on an activities of daily living and happiness scales, respectively)?” Drawing from the same example, hypotheses to be tested might include (a) Distancing illness narratives will produce the best physical functioning and mental health outcomes in comparison to encompassing and

denying narratives; (b) Encompassing illness narratives will produce the worst physical functioning and mental health outcomes in comparison to distancing and denying narratives. In this kind of study, the qualitative data (illness narratives) have to be transformed into categorical variables to answer these questions or test these hypotheses. Yet the nominal simplification of these narratives into Types 1, 2, and 3 is in fact the product of a highly complicated series of interpretive moves to clean up the messiness of interview data: to reduce them in a way that optimizes both the descriptive and interpretive validities (Maxwell, 1992) prized in qualitative research (i.e., getting the “facts” and the actors’ points of view right) and the internal validity prized in quantitative research (e.g., establishing sufficient construct validity of the codes *encompassing*, *distancing*, and *denying* and interrater reliability in assigning these codes to the interview data).

The Vagaries of Counting

The conversion of qualitative into quantitative data in mixed methods research is often done to put qualitative data into a form amenable to statistical assimilation with other data understood to be already quantitative by virtue of the fact that it was produced from what are considered to be quantitative data collection procedures and statistically analyzed. Yet glossed by the “familiar architecture” (Love et al., 2005, p. 277) of inquiry as qualitative or quantitative is that the already-quantitative data awaiting combination with the soon-to-be-quantitized qualitative data were themselves the products of quantitizing. A common example is when standardized questionnaire responses are assigned numerical values via the designation of verbal anchors, such as 0 = *never*, 1 = *rarely*, 2 = *sometimes*, 3 = *most of the time*, 4 = *always*. Such numbers have no “objective anchoring” as they depend on the conceptualization of the target phenomenon embodied in the questionnaire (Edwards, Dattilio, & Bromley, 2004, p. 593): in this example, on its conceptualization in terms of frequency of occurrence. The objectivity attributed to their numerical precision inescapably rests on subjective decisions made by the researchers designing the questionnaires and the participants who are asked to choose the verbal anchor that best represents their experience of the target phenomenon, here conceptualized as occurring somewhere between never and always. If a respondent interprets *rarely* as occurring 1 day in a week and *always* as occurring every day in a week, *always* may be coded as a 7 instead of as a 4. If the respondent’s frame of reference is days in a month instead of days in a week, *always* may be coded as 28.

Although there is nothing inherently zero-like about 0 nor four-like about 4 (Hanson, 2008), respondents do assign meaning to the numbers themselves apart from the verbal anchors. In a review of self-reports, Schwarz (1999) described experiments in which respondents were presented with two different 11-point rating scales to assess perception of success in life; the first scale ranged from 0 = *not at all successful* to 10 = *extremely successful*, whereas the second scale ranged from -5 = *not at all successful* to 5 = *extremely successful*. Of the respondents, 34% selected a value between -5 and 0 on the -5 to 5 scale, whereas only 13% selected one of the formally equivalent values between 0 and 5 on the 0 to 10 scale. According to Schwarz (pp. 96), when *not at all successful* was attached to 0, respondents interpreted this to mean the “absence of outstanding achievements.” When *not at all successful* was attached to -5, with 0 as the midpoint, they interpreted it as the “presence of explicit failures.”

This finding recalls a qualitative study one of us conducted of women’s experiences of unplanned cesarean birth (Sandelowski & Bustamante, 1986), in which women were asked to sum up their narrative evaluations of this experience from 0 = *bad* to 10 = *good*. In this study, no one rated it as 0, even women who had just finished telling highly negative stories about their birth experiences. Apparently interpreting the numbers like grades on a personal test, one woman explicitly stated: “I wouldn’t put myself at 0.”

Because respondents interpret both verbal anchors and the numerical values attached to them, all behavioral and social science questionnaires that rely on such anchors may be said to constitute a qualitative form of data collection, with words and numbers deriving their meaning solely from the particular meaning context of the questionnaire. Arguably, except for eliciting information about manifestly numbered entities such as age, duration of an event, and laboratory values, there is no purely quantitative data collection per se even in health, behavioral, and social science research commonly referred to as quantitative. Even in the case of laboratory values, numbers derive their meaning from a specific context; a fasting blood glucose of 100 mg/dl means nothing without a concurrent understanding of it as high or low, or normal or abnormal, for the age, sex, stage of disease, or other circumstance of the person tested, in addition to an acceptance of its measurement in terms of milligrams per deciliter.

Indeed, much backstage interpretive work is required to assign a numerical value to an entity, or to what Martin (2004) referred to as “counting.” Counting is usually taken for granted as a mundane and transposable process and, thereby, as an objective and transparent process not requiring much scrutiny. Yet, as she demonstrated in her history of the vagaries of counting human chromosomes, counting is an inherently subjective and inter-subjective practice. As Martin observed

To count a number of objects, we must render them distinct and discrete. We must make judgments about sameness and difference, so that we can tell what “counts” as an object in question and what doesn’t. We must have tricks or techniques to mark and exclude what has already been counted, to make sure that nothing is counted twice or not counted at all ... Counting is intersubjective; we rely on others to verify our counts when we ask “how many did you get?” If the number is different, we count again. Counting is a process of individuating. We must be able to actively delineate and agree where one (something) ends and another begins. (p. 925)

Furthermore, according to Martin (2004, p. 939), making objects countable transforms them as they achieve “ontological individuality” by virtue of being made countable. Counting forces the counter to define and separate objects. Counting is, thus, a “disciplinary technology” as it makes objects “docile” by giving them clear and nonoverlapping boundaries (p. 939). A count, and the counting by which it is produced, is considered correct when objects are separated enough so that other counters can agree on the total number. Counts become incorrect or, at the very least, suspect when counters disagree or when community standards for what counts change. Most relevant to counting qualitative data, counting will be a difficult task depending on objects’ resistance to being separated. Commonplaces in the qualitative research literature are the uncountability of experience and of experience as encompassing something more than, or different from, what can be counted. Indeed, qualitative researchers often resist counting by appealing to the resistance to counting of qualitative data itself, with *data* conceived as an “uncountable singular” and indivisible, as opposed to plural and divisible (Holliday, 2002, p. 69).

Objects and their representations are merged in the process of counting. That is, counting is an intervention that brings objects into being and, thereby, allows them to be talked about as discrete entities (Martin, 2004). Martin’s analysis shows why the “interpretive gesture” (Love et al., 2005, p. 283) is always present in quantizing of any kind, that is, why quantizing is never simply quantitative. Indeed, no clear line can be drawn between quantizing and qualitzing as they entail each other. “Quantitative knowing depends on qualitative knowing” (Campbell, 1978, p. 361). Conceiving quantizing as unidirectional—as moving from so-called qualitative to quantitative data—masks the continuous cycling between assigning numbers to meaning and meaning to numbers.

Furthermore, the very notion of what constitutes quantizing varies with perspective. For example, qualitative data assigned nominal numerical values are still typically considered qualitative from a quantitative researcher's perspective as they cannot be appropriately used in arithmetic computations (e.g., in sums). They should be used only as predictors treated as factors in analyses of variance or outcomes in logistic regression analyses. Qualitative data assigned ordinal numerical values should also be used only as predictors treated as factors in analyses of variance or outcomes in logistic regression analyses, but these methods can sometimes be adjusted to account for their ordinal nature (e.g., using cumulative logits instead of generalized logits for polytomous logistic regression). Such ordinal data can appropriately be used also as outcomes in nonparametric, distribution-free statistical procedures. From a quantitative researcher's perspective, fully quantitized data would be only those data that could be treated as interval-level data amenable to use as continuous predictors or outcomes. (Many data are ordinal-rather than interval-level, yet are treated as interval-level for analysis purposes.) Yet even in the case of such fully quantitized data, qualitizing occurs (e.g., as when people with low scores are labeled nonadherent and people with high scores are labeled adherent, or when *depressed* is defined as having more than a fixed number of depressive symptoms).

Judgments of Similarity and Difference as Bases for Counting

Judgments about similarity and difference are integral to counting, as Martin (2004) observed. According to Quine (1969, p. 116), "nothing is more basic to thought and language than our sense of similarity; our sorting of things into kinds." Similarly, there is nothing more basic to counting than sorting things into kinds, conceiving, for example, that (countable) objects *a*, *b*, and *c* are all instances of countable theme *x* or that objects *a* and *b* are different from object *c* and, therefore, represent instances of *x* as opposed to *y*: Both processes entail seeing face or deep resemblances or differences between countable entities, with face resemblances potentially becoming deep differences, and face differences potentially becoming deep resemblances after further analysis. Judgments of similarity are foundational to claims of reliability, confirmation, convergent validation, or of having found a theme or pattern. Judgments of difference are foundational to claims of refutation, divergent validation, and of having found a negative case.

As a hypothetical example, analyzing a series of transcripts of interviews conducted with 50 HIV-positive women, a researcher noted that some:

1. Women reported that ignorance about HIV infection caused people to fear it
2. Women described HIV infection as no different from any other disease
3. Women felt that they were judged more harshly than HIV-positive men
4. Women expressed anger at others' suggestion that they not have children
5. African American women felt they were judged more harshly than White women
6. Middle-class women felt different from the "stereotypical" HIV-positive person
7. Women kept their HIV status a secret from others

These expressions appear topically different and an analyst might continue to treat them as thematically different. Conversely, an analyst might see them as topically different expressions of the same theme. A first similarity move might be to see all these expressions as indications of the negative reactions of others to HIV infection. A second similarity move might be to interpret all these expressions as empirical indicators of stigma as defined by Goffman (1963) or other theorist. A third similarity move might be to see all these expressions as ways women not only acknowledged HIV-related stigma but also minimized it. A fourth similarity

move might be to conclude that women managed HIV-related stigma by (a) attributing HIV-related stigma to the deficiencies of others (i.e., racism, sexism, ignorance), (b) disavowing any identity as HIV-positive or with other HIV-positive persons, and (c) normalizing HIV infection as a disease like any other. In a difference move, although Items “a” and “c” might suggest to the analyst rejection of the notion that there is anything wrong with having HIV infection, Item “b” suggests the incorporation of the prevailing cultural sentiment that HIV infection is to be disavowed. If the analyst wanted to put these findings into a form that would allow them to be statistically treated, each of these management strategies might be assigned a unique number to indicate different ways to achieve the same goal with a view, perhaps, of determining which of them predicts successful minimization of stigma and, especially, whether accepting or rejecting prevailing ideas about HIV infection leads to the best outcomes (e.g., medication adherence, psychological well-being). Or, all these different strategies might be assigned the same number to indicate the common goal they share (i.e., the minimization of stigma) with a view, perhaps, of determining the associations of stigma-minimization strategies with one or more other variables. How these entities are seen to be related and, specifically, whether and along what lines similarity or difference is emphasized will determine how they are quantitized that will, in turn, influence the results of any quantitative analysis.

The quantizing of qualitative data must also take into account how these data are seen: for example, whether interview transcripts are viewed as reasonably accurate indexes of actual experience (i.e., what women thought or did) or of something else. Following Hammersley’s (2008, p. 91) summary of conceptions of interview data, these data may be viewed as sources of “witness accounts about events and settings in the social world,” of “self-analyses by informants,” of “evidence about informants’ orientations,” or as sources of “evidence about the constructional or discursive work engaged in by informants.” Women’s attributions of HIV-related stigma to sexism, racism, or ignorance and stated beliefs that HIV infection is no different from other conditions may, for example, be treated as reflections of what they “really” believed or as moral accounts or narrative constructions directed toward impression management or preservation of a certain kind of identity.

Consider the following hypothetical exchange, adapted from Valsiner (2000, p. 102) to fit the HIV-positive example above. Women are asked:

I: How satisfied are you with your life right now?

R: Hmm I think I am very satisfied. of course, it is hard to say I had not thought of this in terms of satisfaction. But if I had to say, I would say very satisfied.

This exchange (which is itself an interpretive move as it is extracted from what preceded and followed it in a transcript, which is, in turn, an after-the-fact reconstruction of an interview; Poland, 2002) could be variable coded (Sivesind, 1999) as 4 = *very satisfied* using a 4-point scale in which 1 = *very dissatisfied*, 2 = *more dissatisfied than satisfied*, 3 = *more satisfied than dissatisfied*, and 4 = *very satisfied*. This exchange could also be theme coded (Sivesind, 1999) as 1 = *difficulty or hesitancy answering the question*, 2 = *had never thought of life in terms of satisfaction*, or 3 = *indicates acquiescence to interviewer’s languaging of experience*. Here the narrative features of the exchange, not the informational content, are what counts and, therefore, get counted with any other responses showing such features. The variable coding of content of 4 = *very satisfied* does not account for the theme coding suggesting that the “very satisfied” response was not an unqualified one (and, therefore, may arguably not be a valid representation of this woman’s “real” experience).

The structure of this exchange is similar to the structure of a closed-ended questionnaire, that is, there is a questionnaire mindset in eliciting a rating of an experience already languaged in terms of degrees of satisfaction. In that sense, the mode of data collection may be said to be quantitatively informed as it approximates the fixed horizon questioning of a standardized

questionnaire amenable to conversion into a single variable represented by a unique number. As in a questionnaire, the interview question itself seems to generate the answer “I am very satisfied,” as evident in the qualifiers “I think ... but of course it is hard to say ... (and) I had not thought of this in these terms. But if I had to say ... I would say ...” The if-I-had-to-say ... would-say portion of the response raises the question of whether the interview situation itself is the condition under which the woman is very satisfied, but would not be under other conditions; it is clearly not like saying *very satisfied* categorically. Indeed, this response is narratively unlike—albeit informationally like—the response of the person who says categorically and with no qualifications that she is very satisfied. In short, what gets counted here will depend on whether the data are conceived and treated, for example, as indexes of something true about the experience of the respondent or as, for example, moral accounts or instances of face-work or social desirability.

The facts that any one segment of text can be read in more than one way and that interviewees may mean more than one thing in any one expression are understood as givens in qualitative research. (Indeed, quantitative instruments can themselves be read as something other than participants’ responses to researchers’ questions about a target event or experience, for example, as protests to the very way those events or experiences are treated in instruments, as when respondents write in the margins, do not follow directions, or otherwise violate researchers’ expectations; e.g., Clayton, Rogers, & Stuijbergen, 1999; Evans, Lambert, & Goldacre, 2005). The challenges of quantizing are to decide which readings will be the objects of conversion and for what purpose. In the satisfaction example above, respondents could be rated on two factors that could be used in an analysis of variance: degree of satisfaction and degree of hesitancy about evaluating their satisfaction. These two factors could be used to assess their combined effect on a designated outcome, either as main effects in an additive model or with their interaction also included in the model. This example illustrates how quantizing may contribute to apprehending the complexities and contradictions in interview data even while preserving them, and how it can be deployed to accommodate realist and constructionist analyses (Gubrium & Holstein, 1997) oriented toward the informational contents and narrative/discursive features of data, respectively.

1 (*Present*) Versus 0 (*Absent*)

Foundational to assessments of similarity and difference are researchers’ judgments about whether something is present or absent in a data set. When Kerlinger reportedly claimed that there was no such thing as qualitative data—that everything was either 1 or 0—he was referring to the product of a decidedly qualitative process. 1 and 0 are not properties of anything (again, there is nothing inherently one-like about 1 nor zero-like about 0), but rather they are “symbols” tied to particular contexts (Hanson, 2008, p. 102): to judgments made about whether something was present or absent (missing data, “secrets,” “silences” in data; Poirier & Ayres, 1997). Presence is, therefore, better understood as a function of what a researcher is prepared and inclined to see, whereas absence is better conceived as a function of what a researcher is prepared and inclined to see but does not.

Present and *absent* may signify different things in transcribed interview data. Present in interview data may, among other options, mean that “it” (a) spontaneously came up in discussion, (b) was directed to come up in discussion, (c) was seen by the analyst between the lines, and (d) truly was a dimension of experience. Absent may, among other options, mean that “it” (a) did not come up; (b) was not seen by the analyst; (c) was forgotten as a factor by the participant; (d) was thought by the participant to be so understood as to not require bringing it up; (e) was a factor, but the participant did not want to bring “it” up; (f) was not brought up because the conversation veered away from “it”; and (g) truly was not a dimension of experience. 1 or 0 may signal a host of such diverse circumstances.

Contributing to the present-absent problem is the minimally structured and open-ended interviewing style typically associated with qualitative studies that allows an unlimited number and unspecified nature and direction of responses and, therefore, yields data with a wider range of responses concerning a target event. This complicates judgments about whether something is missing from the data (but potentially present in experience) or missing from experience (albeit present in the data). The open-ended nature of the typical qualitative research interview makes it more likely that qualitative data sets will not be directly comparable with each other in the quantitative sense, or with responses to a standardized questionnaire ostensibly addressing the same “it.” (We use the word *ostensibly* here to acknowledge the view that different modes of data collection can never address the same “it.”) I/O may refer to manifest content—something right there or not right there in the lines—or latent content, that is, something that could be seen to be there or could be seen not to be there between the lines, as in the life satisfaction example described previously. Again, I/O may refer to the informational content or the narrative/discourse features of the text or some other product of the unique relationship between researcher and researched and reader and text.

I/O also raises the problem of dichotomizing. The qualitative/quantitative dichotomy itself elides considerable within-group variation and between-group similarity. Yet, whether working with qualitative or quantitative data, any effort to dichotomize risks the loss of critical information and of analytic power. As Cohen (1983, p. 253) concluded for quantitative research, dichotomization results in significant losses of variance on the original variables and of “power equivalent to that of discarding one-third to two-thirds of the sample.” Similarly, converting qualitative data into dichotomous variables undercuts a major rationale for conducting qualitative research, namely, to capture the nuance and subtlety of particulars whereby shades of gray prevail over black/white. Yet the majority of published examples of quantizing use dichotomous variables because of the relative ease of doing so.

An alternative to I/O is to create ordinal variables. Such variables minimize the loss of sampling and analytic power resulting from dichotomization and preserve the shades of gray in the qualitative data undergoing conversion. Thus, for example, instead of indicating that a thematic line was present or absent on interview or observation, researchers could indicate the extent to which it was present, for example, by evaluating the amount of space or time given over to it. This quantification could be further converted into *not discernible*, *noted in passing*, *important*, or *dominant*, which could then be coded in a variety of ways: for example, as 1 to 4 to indicate a linearly increasing extent of space or time, or as 1, 2, 4, 8 to indicate an exponentially increasing extent of space or time. As with dichotomous variables, the ordinal-level variables might then be used in inferential statistical analyses.

Quantitative Data as Placeholders for Converting Qualitative Data

A common approach to quantizing is to use the results of a prior quantitative analysis of quantitative data as the framework for the conversion of qualitative into quantitative data. This framework provides the decision rules for a directed form of content analysis whereby a priori codes are derived from a quantitative data set and applied to a qualitative data set (Hsieh & Shannon, 2005). A case in point is a study (disguised here) in which nine classifications based on possible scores on a questionnaire assessing open and closed awareness of personal spirituality was used to evaluate type of awareness in open-ended written accounts of critical life events in which respondents were never explicitly asked about their awareness of spirituality. To make these data comparable, researchers had to eliminate a sizeable number of cases because they were impediments to the achievement of sufficient interrater reliability and because they did not represent “perfect” theoretical cases, meaning cases that conformed to the theory linking awareness of personal spirituality to accounts of critical life events. The researchers still claimed, however, a correspondence between questionnaire scores and ratings

of the written accounts and that this correspondence empirically demonstrated that the qualitative data (written accounts) and quantitative data (questionnaire scores) replicated each other and were, therefore, exchangeable with each other.

At issue here is whether any replication occurred at all as the qualitative data were forced to conform to the quantitative data (coded only in terms of an a priori definition of awareness of spirituality) or discarded altogether when they could not be made to conform. Using quantitative data as the “placeholder” (Miller, 2003) for conversion of qualitative data sets a serious limit on the analysis of those qualitative data and calls into question whether any “diverse testing” occurs at all (Miller & Gatta, 2006). Mixed methods research is frequently promoted as enabling diverse testing, or a form of convergent validation, on the premise that two different modes of data collection (qualitative and quantitative) that yield the same results lend more weight to the validity of that result. Yet when the coding of qualitative data is made to conform to quantitative results, it is possible to argue that only one test, not two tests, was actually used.

Conclusions

Quantitizing is a methodological intervention directed toward engineering data to fulfill what may seem to be opposing purposes, including the reduction and amplification of data, in addition to the clarification of and extraction of meaning from data. In both qualitative and mixed methods research, quantitizing—like coding and other analytic devices, such as tabulating and diagramming—serves as a way to think about and interact with data. Quantitizing is a sensible and, therefore, defensible “simplifying device” (Mol & Law, 2002, p. 4) that, when used creatively, critically, and reflexively, can show the complexity of qualitative data and, thereby, the “multivariate nature” of the experiential worlds researchers seek to understand (Tufte, 2006, p. 129).

Yet quantitizing depends on the backstage work of counting, a process that tends to mask by virtue of its familiarity what and how something came to be the object of conversion. Indeed, once data conversion is accomplished, the work of conversion “disappears” (Mol, 2002, p. 236). Disappearing along with this work is the inherently qualitative nature of all data conversions as they necessarily entail researchers’ judgments about what will constitute data and how to represent them.

Given the challenges of converting qualitative into quantitative data—of preserving the rich messiness of qualitative data while converting them to another form—researchers must have a clear sense of why they want to quantitize at all. They must consider what the added value is of transforming qualitative into quantitative data: whether and how qualitative data are enhanced by putting them into a form that allows the assignment of numerical values. Numbers have tremendous rhetorical appeal, in part, because of their association with scientific precision and rigor. They substitute the simplification and security of numerical precision for the complication and ambiguity of narrative. The issue is whether numerical precision can satisfactorily grab enough of the complexity of narrative both to understand and communicate it.

Questions about quantitizing go to the heart of the mixed methods research enterprise and some of the assumptions on which it is based. Foundational to the mixed methods enterprise is the traditional “iconograph(ic)” (Law, 2004, p. 4) separation of qualitative from quantitative inquiry. Yet it is by no means uncontested that research is divisible by two, as the words *qualitative* and *quantitative* are used to refer to such a wide variety of research entities. Indeed, the continued use of these adjectives masks considerable between-group (qualitative vs. quantitative) similarities and within-group (within-qualitative and within-quantitative)

differences (Sandelowski, 2003; Schwandt, 2000), suggesting a greater-than-two notion of research approaches. Vogt (2008) described the traditional qualitative/quantitative distinction as distracting researchers from addressing a wider array of methodological challenges. He further argued that by emphasizing the mixing of qualitative and quantitative data, methods, perspectives, and the like, the mixed methods research movement was paradoxically reinforcing a binary that is best deemphasized or even discarded. This binary understanding of the world of inquiry as divided into two serves to reinforce the idea that quantizing is distinct from, rather than entails, qualitzing.

Maintaining the binary distinction, Maynard and Schaeffer (2000, p. 331) proposed that the relationship between qualitative and quantitative research has been defined as one of either “conditional complementarity” or “critical remediation,” with quantitative researchers leaning to the former and qualitative researchers leaning to the latter. As they summarized it, from the conditional complementarity standpoint, the contribution of qualitative to quantitative research has traditionally been viewed as conditional on whether qualitative research can provide a sound basis for defining the research problem, research questions, and hypotheses for quantitative studies yet to be launched or for interpreting the results of quantitative studies already completed. Qualitative research is here conceived as in the service of an “essentially enumerative inquiry” (p. 333). In contrast, from the critical remediation standpoint, the contribution of qualitative to quantitative research is to offset the weaknesses of quantitative research, that is, its lack of attention to complexity, context, voice, and discourse. Qualitative research is here conceived as essential to the validity of quantitative inquiry. Maynard and Schaeffer went on to argue for a third position, namely, “analytic alternation” (p. 335), whereby the contribution of qualitative research (for them, in the form of ethnomethodological conversation analysis) is to uncover the “in vivo” (p. 336) work of quantitative research (in the form of surveys), or how rules, procedures, and instruments for conducting research are deployed.

In addition to further specifying the relationships between qualitative and quantitative research, we see these concepts as useful for clarifying the appeal and work of quantizing. We see utility in adapting the concept of conditional complementarity to express the sentiment that qualitative data do not need to be quantized for them to have value. That is, from the standpoint of conditional complementarity, quantizing can be seen to add value to qualitative data only when converting it into quantitative form (i.e., nominal-, ordinal-, interval-level data) allows more meaning to be extracted from it and when that form allows researchers to answer important questions or test hypotheses that could be convincingly answered or tested no other way. We see utility in adapting the concept of critical remediation to acknowledge the value of quantizing. That is, from the standpoint of critical remediation, maximizing the numerical precision of qualitative data and their compatibility with quantitative data can be seen to enhance the value of qualitative data.

From the standpoint of analytic alternation, qualitative (i.e., ethnomethodological or other) study of the process of converting qualitative data into quantitative form can shed light on the work involved in turning one thing into another and in justifying that work. This article is a beginning effort, and calls for more efforts, toward that end.

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