Reply to Stenner

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We are grateful for Paul Stenner's response to our article "Q Methodology and its Position in the Mixed-Methods Continuum" (this issue), and we appreciate his mostly positive view of our manuscript. We agree with many of his points although we are perplexed by some of his perceptions regarding our position on the mixed-methods continuum. We will detail these accordingly. However, we will focus on the methodological mixture of qualitative and quantitative research methods rather than the philosophical position on Q methodology specifically and mixed-methods research in general. Although we certainly made philosophical references, we did so with the purpose of explanation rather than a main focus for the article. Certainly the term is mixed-methods research, not mixed research philosophy. The concept of mixing philosophies is often considered more complex than the mixing of methods (Creswell, 2010; Newman & Benz, 1998). And we are only tackling the latter here, related to Q methodology, not the former. Thus, our response focuses solely on describing the mixing of *methods* (even though we strongly agree one cannot and should not separate the philosophy from the methods). The emphasis is on the methods and the description of the methods within Q methodology, which is the purpose of our article.

As we began that artcile, we referred to Stenner's (2008/2009) call for Q methodology to enter contemporary social theory and research practice. The purpose of our article was to "demonstrate how Q fits into the contemporary research practice of mixed methods and that this perspective is not in conflict with Stephenson's positions on Q as a methodology" (this issue, p. 172). As we stated in our article, we focused our discussion on how Q methodology fits into the mixed-methods continuums, methodologically, as described by Ridenour and Newman (2008) and by Tashakkori and Teddlie (2009). In our original discussion in this issue, as well as elsewhere (Newman & Ramlo, 2010), we separated Q methodology into two parts—Q sort (including developing

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the concourse) and factor analysis—while stressing that the methodology is the combination of the two. In that discussion we talked about the qualitative aspects of the sort, including development of the concourse, but also that the sorting process allows for quantification of subjectivity. When discussing the factor analysis, we spoke of the interpretation of the factors as highly qualitative. To extend this discussion, and to clarify our position, we now discuss the mixture of qualitative-quantitative research methods in the factor analysis used in Q.

Recently, one of us (Ramlo) had a discussion about factor extraction and rotation with a dissertation student who was using Q methodology. This student explored the study's factor structure by using various combinations of factor extraction (centroid and principal components) and rotation (varimax and hand). The combination of centroid and varimax appeared to reveal factors that made the most sense, based upon the student's knowledge of the sorters, compared with the other combinations. The discussion between advisor and graduate student seemed to reflect the topic of this response better than any other that has come to mind. Thus that discussion is summarized here to explain our premise that Q methodology is a mixed method in many ways even when we consider the factor-analysis component of Q methodology. In other words, we will discuss the qualitative aspects of a process that is typically considered quantitative; we have selected this topic in order not simply to repeat what we discussed in our article but, instead, to demonstrate further how Q methodology mixes the qualitative with the quantitative.

In R-factor analysis, researchers prefer principal components extraction with varimax rotation. This choice minimizes error and produces the strongest factors—for example, it minimizes the correlation among the factors. In R-factor analysis, researchers typically use objective ways of determining when to stop factoring, like scree plots. However, in Q methodology we are not worried about these types of statistical considerations. Q researchers do not refer to scree plots when discussing how they determined the number of factors to extract. Instead, Q methodologists typically explore different factor structures, as did the graduate student mentioned here (i.e., they try different combinations of extraction and rotation, often selecting different number of factors to extract). In other words, Q researchers typically follow "hunches" while they explore the various factor structures that can result from the Q sorts being evaluated. Not only is this type of exploration considered completely kosher, it is encouraged. This exploration is acceptable because, of course, Q methodologists are more interested in a rather qualitative purpose, like that described by Ridenour and Newman (2008); Q researchers wish to uncover a factor

structure that makes sense, in a descriptive/qualitative way. This "making sense" typically involves abductive reasoning with researchers following hunches that may have come about, for instance, from the post-sort interviews or other qualitative types of information.

Thus, researchers—whether qualitative or quantitative, if we wish to make that distinction—would easily label factor analysis as quantitative. Yet in Q methodology, even the quantitative mixes with the qualitative. We believe examining this aspect of Q methodology alone helps us perhaps better describe our position that Q represents a mixed methodology. It also assists us, we think, in describing the continuum that represents qualitative-quantitative research as described elsewhere (Ridenour & Newman, 2008; Tashakkori & Teddlie, 2009). We hope that the reader can see here that we are not representing this continuum as a dichotomy of qualitative and quantitative. There is an interesting quote by Jean Lipman-Blumen (1985) in "The Creative Tension Between Liberal Arts and Specialization". In that piece she says "dichotomies have their manifest utility, as well as their latent traps. They offer us an heuristic scalpel, to cut phenomena into slices thin enough for us to examine" (p. 18). The advantage of this dichotomy concept is to facilitate communication, but one has to be careful, as Lipman-Blumen indicates; there are no true dichotomies in a world of "concatenated complexities." However, the dichotomies can be a useful tool to facilitate discussion of complex antithetical end points.

Reality is not dichotomous and neither is science. Although researchers often use dichotomous variables/ideas to help communicate their ideas, we recognize that this is the purpose—communication—rather than insisting upon the existence of the dichotomy. Because, perhaps, some are more guarded when applying this idea to a specific methodology, like Q, we will demonstrate further what we mean here by using an example that is from the realms of physics and individuals' personal experiences. Everyone is familiar with the concept of temperature. We see today's or yesterday's high and low temperatures reported routinely on TV and in the newspaper or even on a weather application on our smartphones. Yet we can argue that temperature represents a mix of qualitative and quantitative without bifurcation. For instance, in the USA, "room temperature" is 68°F which is 20°C and 293°K. Some would say that 20°C is too chilly and turn up the heat. Others may find it quite comfortable even in shorts and a t-shirt. If it has been 5°C in Northeast Ohio and a sudden warming trend brings the temperatures to 20°C, some might believe it is warm enough to go swimming. Yet on the coastline of Florida, when the temperature reaches 20°C, some people may be walking the beaches in a winter parka.

Therefore, whether a specific temperature represents warmth, perfection, or chilliness is subjective but does not represent a dichotomy between quantitative and qualitative. In this way we agree with Ridenour and Newman (2008) that qualitative and quantitative do not represent two distinct categories but, instead, a continuum of research. Earlier, Newman and Benz (1998) first described this continuum as interactive and perhaps that is the best phrase we can use here; Q methodology is part of an *interactive* continuum of research where each piece informs the other. This has a more consistent implication for Q methodology. We certainly hope that we have clarified our position here about the qualitative-quantitative continuum known as mixed methods as well as Q's position within that interactive continuum.

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