A number of questions are provoked by the comprehensive identification of gaps and deficiencies in the training of quantitative methodology that led Aiken, West, and Millsap (January 2008) to call for expanded graduate instruction resources and programs:

1. What proportion of a graduate student’s study energy and time should be given over to acquiring this nonsubstantive, ancillary body of knowledge? Because this realm of study poses novel cognitive demands that often require more intense and prolonged study, it threatens to crowd out opportunities to explore and deepen interests in more substantive areas. As the body of knowledge in this field continues to increase, is there a danger that it will begin to saturate, and thereby distort, the expenditure of effort and study during graduate training?

Apart from the time and effort required to master such material there is the question of its relevance. The authors fault quantitative courses offered outside of the psychology department because they are not contextualized in a manner that is relevant to psychologists, but the diversity of interests and career trajectories within a psychology department is so great that it too poses a challenge to the relevance of what is being taught.

2. How will such expanded instruction affect the nature and content of research? The authors rightly note that the availability of new quantitative techniques opens up new areas of inquiry. But what of the reverse effect—the propensity to use tools that have been acquired at great expense, the drift toward activities and projects that allow one to use these valued tools even when there is other work to be done? For example, will exploration and research in psychology be skewed in the direction of studying larger samples that by their nature limit the depth and complexity of the behavior to be studied, of limiting psychological investigations to behaviors that are more amenable to quantitative analysis, of simplifying and thereby trivializing data-gathering procedures and observational techniques so that they can be conducted more reliably and efficiently, and of placing greater emphasis on statistical as opposed to conceptual analysis of data?

3. To what extent does the increasing reliance on sophisticated quantitative analysis and method serve as a gatekeeping force that backfires by selectively discouraging and excluding students whose special skills do not fit this mode of inquiry, thereby depriving the field of cognitive interests and dispositions that might be capable of deepening and broadening psychology’s knowledge base?

In sum, this comment calls for greater attention to how advances and expansion in the training of quantitative analysis are influencing those who chooses to study psychology and how and what will be studied. It is interesting to note that the one article listed by Aiken et al. (2008) for Cronbach (1957), one of the stellar contributors to quantitative methodology cited by them, points to the tenability of “two disciplines of scientific psychology.”

REFERENCES


1. What proportion of PhD study should be devoted to methodology, and how can methodological training be relevant to all students, given the diversity in interests and career trajectories? We believe different departments and different concentrations (e.g., clinical, cognitive) may answer this question differently; there is no “one size fits all” formula. Given the many demands of graduate training, we argue for efficiency of effort in acquiring needed knowledge of methodology. Much substantive material is mastered by reading and through discussion with mentors and peers. Quantitative methodology is most efficiently learned in the classroom; it is difficult to learn new methodological material on one’s own and almost impossible without an appropriate foundation. Relevance of methodological training is introduced through selection of topics appropriate to students’ substantive interests. It is also introduced by students as they bring their own research questions and data to the classroom. It is facilitated by the synergy created as students learn new methodological tools, face unanswered questions in their substantive research area, and see other students bring methodological tools to bear on similar questions.

2. Will expanded knowledge of new advanced methodologies skew the choice of psychological research to studies that permit use of new techniques? A solid foundation in methodology leads to the simplest approach that will provide a good answer to a research question. New methodologies have helped open up important research areas (see Aiken et al., 2008, for examples). Important substantive questions can drive the development of new methods. Not all methods are for large samples. Methodologies currently exist for single-subject designs for the study of within-individual processes over time; new small n methods are appearing in statistics journals. What the discipline of psychology values as important questions conditions the use of new methodologies and thus the need for quantitative training, not the converse.

3. Will the use of increasingly complex and sophisticated methodology selectively exclude students whose talents and interests lie elsewhere? We cannot deny that methodology in psychology grows in complexity, as it does in our sister social, biological, and physical sciences and in engineering. So must the mastery of methodology lest we stagnate as a science.

Zimiles (2008) closed by citing Cronbach’s (1957) distinction between two disciplines of psychology (correlational and experimental). In contrast to Zimiles’s implication, Cronbach over 50 years ago called for integration of these two disciplines and cited some hopeful early signs. Traditional areas of “hard” and “soft” psychology now draw on both approaches. Emerging new methodologies such as mediation analysis and multilevel modeling further this integration and underlie research that is producing a richer, more complete science of psychology.

REFERENCES

Correspondence concerning this comment should be addressed to Leona S. Aiken, Department of Psychology, Arizona State University, Box 871104, Tempe, AZ 85287-1104. E-mail: leona.aiken@asu.edu

DOI: 10.1037/a0013760

Excellence in Socio-Technical Teamwork Requires Both Cognitive and Emotional Bonding

George B. Graen
University of Illinois at Urbana–Champaign (Retired)

Van Vugt, Hogan, and Kaiser (April 2008) came to three conclusions from their rump over 2.5 million years of earth history involving many species. First, studies of leadership must include both who is ahead (leaders) and who is behind (followers). Second, leaders and followers may disagree. Third, people’s life experiences shape their reactions to leadership. In spite of these conclusions, Van Vugt et al. failed to mention or cite any recent articles on the research program that showed clearly that leadership is not only leader behavior toward a group but also is rooted in the mutual goal-enactment behavior and working relationship both between individual followers and between follower and leader at the dyadic and group levels (Graen, 1976, 2009; Graen, Hui, & Taylor, 2006; Graen & Uhl-Bien, 1995; Graen & Wakabayashi, 1994; Uhl-Bien, 2006).

A paradigm shift in the study of leadership was suggested by longitudinal studies that revealed that the quality of working relationships between superior and subordinates varied noticeably within groups at work and that psychometric measures of this variability were significantly predictive of work outcomes, including physical and psychological health, job attitudes, organizational commitment, voluntary leaving of a company, job performance, promotability, and career-long success in management (Graen, 2003). Measures of leader and follower behavior showed that leadership did not reside only in the leader’s power of positive thinking and doing behavior but in the emergent relationships based on consistent histories of leader–member excellence (LMX) building with individual followers. Those dyads that developed excellent interpersonal working relationships based on mutual respect for competence, trust in motives, and commitment to the welfare of the relationship reached the state that I have called psychological leadership. The more one moves toward excellent-quality relationships, the higher the probability of observing emergent leadership behavior from dyads (Graen, 2003). Meta-analysis has shown these predictions to be monotonically increasing (Gerstner & Day, 1997).

At the team level, LMX is joined by its close relative member–member excellence (MMX), which is the quality of the working relationship between people with no direct reporting responsibilities but functional interdependence (Graen et al., 2006). The relationships between leadership outcomes and previous MMX are similar to those involving LMX. The stronger the MMX, the higher the probability of observing emergent team leadership behavior from a dyad. In addition, MMX allows us to complete the web of working relationships inside the team and inside the larger networks. This also works between organizations, for example, between boundary spanners.

Leadership-quality in dyadic and triadic group relationships may help persuade teammates to cooperate, coordinate, communicate, and commit to teamwork on projects. Studies have shown that for professionals on project teams, the higher the proportion of the team with excellent LMX or MMX, the better the team products and the better the team’s internal workings (Graen et al., 2006; Naidoo, Scherbaum, &