cognitive style, the Gregorc Style Delineator (Gridley, 2006b). All but two of those women showed concrete cognitive styles, precisely the preferred style of engineers at large (Deutsch & Shea, Inc., 1957).

Similarities between genders should not be overemphasized just because Spelke (2005) chose not to address thinking styles, just as Hyde (2005) omitted them when propounding her gender similarities hypothesis in a preceding issue of the *American Psychologist* (September 2005). The thinking styles data suggest that the profession of engineering, for instance, may attract individuals who have thinking styles suited for the job, and because significantly fewer women prefer that style, significantly fewer women go into engineering. Note, however, that other factors probably play a larger role in explaining the gender disparity among science and engineering professionals because (a) only about 30% more men than women prefer the engineering-appropriate style known as using Jung's "thinking" function, and (b) engineering-appropriate mathematics ability is not significantly different for women than men.

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Abilities, Motives, and Personal Styles

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Ackerman (2006, this issue) rightly criticized IQ measures of cognitive sex differences on grounds like those Spelke (December 2005) applied to the quantitative portion of the Scholastic Assessment (formerly, Aptitude) Test (SAT-M): We agree that these tests cannot serve as measures of girls' and boys' relative abilities and that measures of mastery of challenging math and science course content are more revealing. Course grades are one such measure; they now reveal no advantage for high school boys or college men in math or science. Ackerman suggested Advanced Placement (AP) tests as a second measure. We are intrigued by this suggestion but believe AP tests have several drawbacks as measures of cognitive aptitude. First, AP tests are expensive, lengthy, and optional. Patterns of test taking therefore are influenced by many factors distinct from cognitive ability, including social and economic status (Klopfenstein, 2004) and career goals. Second, a controversy now exists concerning the relation between performance on AP tests and performance in college courses. Though the College Board claims that AP exam scores predict success in college (Morgan & Ramist, 1998), data on these predictions were not reported by sex. Moreover, a recent, well-controlled study of random samples of college students found little relation between AP test scores in high school and performance in the relevant discipline in college (Bradt, 2006; Sacchetti, 2006). In the absence of clear evidence that AP scores predict college performance, and that equal scores are predictive of equal success by college men and women, sex differences in AP test taking and test performance should be viewed with caution.

Dai (2006, this issue) suggested that cognition and motivation, abilities and strategies, are inseparably bound in any meaningful measure of aptitude for mathematics and science. We agree that these qualities can interact: If male and female infants had equal information-processing capacities but unequal interests, they might learn different things; if male and female high school students deployed common cognitive abilities through different performance strategies, each sex might have an advantage at different subjects. Comparisons of the cognitive abilities of male and female infants in relation to the cognitive achievements of college men and women shed light on these predictions. Spelke's (2005) review found no differences either in the core mathematical abilities of male and female infants or in the developed mathematical mastery of college men and women. These findings are consistent with either of two conclusions. First, the motivations and strategies that interact with mathematical development may be shared by boys and girls. Second, the development of mathematical thinking may be robust over variations in motivation and strategies, contrary to Dai's (2006) suggestions. Where girls and boys show diverging preferences or strategies, their distinctive approaches may provide equally effective avenues into learning of mathematics.

Gridley (2006, this issue) suggested that differences in men's and women's thinking styles and preferences explain gender disparities in math and science fields. Because this is a causal and developmental claim, it cannot be evaluated solely through studies of adults. Sex differences in men's and women's styles, preferences, or aspirations could be either causes or consequences of gender disparities in professional fields. For example, young adults' expressed preferences between different careers may depend in part on their perceptions of the available and appropriate options. The perceived appropriateness of a given field, in turn, may depend in part on whether the field is populated by people of one's own gender.

Because the sex distribution in the medical profession has changed dramatically over the last 50 years, studies of the career preferences of male and female physicians may shed light on these causal relationships. The proportion of women applying to medical schools has risen over the last half-century along with the increasing proportion of female doctors (American Medical Association Women Physicians Congress, 2004). As more women have entered particular medical specialties, the number of female students choosing those specialties has increased. In part, this increase has been attributed to the selection decisions of residency directors, who tend to prefer candidates like themselves (Reed & Buddeberg-Fischer, 2001). In addition, however, the choices of women residents have been influenced by the number of women practicing in that specialty at the senior level (Neumayer et al., 2002). These

findings suggest that some sex disparities in career preferences are consequences rather than causes of sex disparities in the professions. We believe that the same social dynamics influence college men's and women's expressed preferences for different kinds of careers.

Because preferences and choices are sensitive to social conditions, it is difficult to determine whether biologically based sex differences in preferences, motives, and styles also exist and whether such differences make men better suited to careers in mathematics and science. Contrary to these claims, male and female infants have been found to show equal interest in people and objects in almost every well-controlled study, but some studies of older children reveal differing interests whose biological and cultural roots are difficult to disentangle. Some evolutionary psychologists suggest that men's and women's differing roles in reproduction led members of the two sexes to pursue different roles in the hunter-gatherer societies in which modern humans evolved (Pinker, 2002). Even if one accepts the controversial claim that differing sex roles in Paleolithic human societies produced differing preferences and temperaments today, however, it is far from clear how these differences would impact on the career choices of aspiring scientists. Because Paleolithic societies contained no scientists, we can only guess whether better science would come from people with the personal qualities of a good hunter or those of a good gatherer. Moreover, we do not know whether the preferences, motives, and styles that inclined early humans toward hunting versus gathering would incline today's humans toward biology versus physics. The immense changes in men's and women's work and lives over the course of human history suggest that people are highly flexible in their interests as well as their abilities.

Despite the great variation in human lives and cultures over space and time, humans have a strong tendency to attribute their current configuration of social roles to constant and necessary aspects of human nature. Moreover, personality traits that are *typical* of a given profession often are mistakenly thought to be *necessary* to the practice of the profession. Winston (1998) discussed a compelling example of this confusion in the letters written by E.G. Boring on behalf of students seeking positions in academic psychology. In the first half of the 20th century, the academic faculties of U.S. universities were overwhelmingly Christian, but Boring had a number of talented Jewish students. How unfortunate, he wrote of one student, that his considerable talents for psychological theory and experimentation could never flourish in an academic career because he shared "the defects of his race": a brash, passionate, assertive manner incompatible with rational academic inquiry. From today's perspective, it appears that Boring mistakenly assumed that the typical mannerisms of his Harvard colleagues were necessary for success in science. When commentators suggest today that fewer women than men have aptitude for science because few women have the thinking style or the assertive, competitive, or aggressive personalities needed for success in science, we suspect that Boring's mistake has resurfaced.

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The Poor Availability of Psychological Research Data for Reanalysis

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The origin of the present comment lies in a failed attempt to obtain, through e-mailed requests, data reported in 141 empirical articles recently published by the American Psychological Association (APA). Our original aim was to reanalyze these data sets to assess the robustness of the research findings to outliers. We never got that far.

This is what happened. In June 2005, we contacted the corresponding author of every article that appeared in the last two 2004 issues of four major APA journals: *Journal of Personality and Social Psychology, Developmental Psychology*, *Journal of Consulting and Clinical Psychology,* and *Journal of Experimental Psychology: Learning, Memory, and Cognition*. We chose to contact these authors because their articles had been published in prominent journals, which would ensure that the articles were of high scientific quality and that the authors were outstanding researchers (all of these journals have rejection rates of over 70%). Also, the fact that the articles were published recently meant that most authors probably still had access to their data and would be able to send them electronically. A final reason for contacting these authors was that, because their articles had been published in APA journals, we were certain that all of them had signed the APA Certification of Compliance With APA Ethical Principles, which includes the principle on sharing data for reanalysis. This principle is as follows:

> After research results are published, psychologists do not withhold the data on which their conclusions are based from other competent professionals who seek to verify the substantive