affects individuals' actions (e.g., strategies), cognitions (e.g., cognitive interference), and affect (e.g., positive mood) while performing. We suggest, then, that positive and negative effects are related over time and occur within a self-regulatory process (Sansone & Harackiewicz, 1996; Sansone, Weir, Harpster, & Morgan, 1992).

Eisenberger and Cameron (1996) provided a service in cautioning investigators and practitioners against oversimplifying what is in fact a very complex and complicated process and in calling for "a greater synthesis of relevant findings involving reinforcement, social cognition, and personality" (p. 1164). In so doing, however, they oversimplified the message from the original research as well as the current state of knowledge about this complicated process.

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Eisenberger and Cameron's (November 1996) provocative article reiterated the points made in Cameron and Pierce (1994), with one important addition—an examination of the impact of reward on creativity. The claim was made that any detrimental effects of reward on creativity can be avoided and that creativity can be easily increased by the use of rewards (p. 1153). However, Eisenberger and Cameron overlooked or failed to adequately explain several demonstrations of lower creativity on rewarded activities as compared with nonrewarded activities. Moreover, the evidence that they provided of increased creativity under reward is more informative about relatively simple human behaviors (e.g., filling in circles, word generation) than about actual creative performance. Thus, the operationalization of creativity is key to our critique.

Eisenberger and Cameron (1996) failed to discuss a number of published experiments that examine a variety of creative activities (writing, storytelling, artwork, and problem solving), which revealed that products made by participants working for reward are reliably assessed by expert judges who are both familiar with the domain of the target products and blind to experimental conditions. This consensus assessment is much closer to real-world judgments of creativity in the classroom, the corporation, or the art gallery.

Finally, Eisenberger and Cameron's (1996) suggestion that creativity can be increased simply by telling people that they should be original (and rewarding them for being original) is likely to be fruitless. There is experimental evidence that telling people to be creative fails to increase judge-rated creativity even when participants expect expert evaluation on creativity (Amabile, 1979).
Moreover, it is unlikely that in real-world situations, where high levels of creativity are desired, anyone knows a priori what behaviors to reward as creative. The most appropriate interpretation of Eisenberger and Cameron's results is that they demonstrate increased divergent thinking under the expectation of reward for divergent thinking.

Recent research has revealed certain very specific situations under which reward can have either no impact or even a positive impact on intrinsic motivation and creativity. Such effects have been termed motivational synergy, and it has been suggested that they fit well with Deci and Ryan's (1985) cognitive evaluation theory. In one series of studies designed to investigate this phenomenon, researchers were successful at "immunizing" elementary school students against the usually deleterious effects of expected reward. These children, who were helped to focus on intrinsic motivation and were taught explicit techniques for viewing external incentives as secondary to their own interest and learning, were able to maintain baseline levels of intrinsic motivation and creativity and sometimes even showed increases in creativity when promised a reward for task participation (Hennessey & Zibowski, 1993). Beyond the confines of the experimental laboratory, researchers have also interviewed many professional artists who believe that a contracted-for reward can enable them to do exciting work (Amabile, Phillips, & Collins, 1993). Moreover, when working adults feel that incentive systems signal the value of their contribution, their motivation and creativity of performance can be enhanced (Amabile & Gryskiewicz, 1987).

Thus, we agree with Eisenberger and Cameron's (1996) position that it is a mistake to categorically assert that rewards will always lessen task interest and creativity. However, it is important to understand that the instances of motivational synergy that we have outlined here are unusual. The children who were able to distance themselves from the negative effects of reward had received specialized training, and there was little, if any, longevity of these effects (Hennessey & Zibowski, 1993). Similarly, the artists and other adults whom researchers interviewed and studied (Amabile & Gryskiewicz, 1987; Amabile et al., 1993) were highly trained professionals who had reached the pinnacle of their fields. It is erroneous and misleading to conclude, as do Eisenberger and Cameron, that the detrimental effects of reward occur under limited conditions that are easily avoided. Rewards may support intrinsic motivation and creativity if presented in an especially careful manner. Nonetheless, the preponderance of evidence demonstrates that working for reward, under circumstances that are likely to occur naturally in classrooms and workplaces every day, can be damaging to both intrinsic motivation and creativity.

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A Whole Much Less Than the Sum of Its Parts

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Eisenberger and Cameron (November 1996) addressed the literature concerning "detrimental effects of reward," concluding that "our analysis of a quarter-century of accumulated research provides little evidence that reward reduces intrinsic task interest" (p. 1162). Their summary was, in turn, based primarily on the findings from a previous meta-analysis of this literature by Cameron and Pierce (1994), reiterated in Figures 1 and 2 of Eisenberger and Cameron's article.

The methodology of Cameron and Pierce's (1994) meta-analysis and the conclusions drawn from it have been criticized in the educational literature (e.g., Kohn, 1996; Lepper, Keavney, & Drake, 1996; Ryan & Deci, 1996). Because the same putative findings were presented in Eisenberger and Cameron's (1996) article without details concerning their derivation, however, it seems important to alert readers to at least some of the difficulties in Cameron and Pierce's article.

Perhaps the most striking and distressing aspect of Cameron and Pierce's (1994) meta-analysis concerns their treatment of experiments that reported significant, even complete "crossover," interactions between their reward variables and other factors not included in their analysis. To take one example, in three separate experiments (Calder & Staw, 1975; Loveland & Olley, 1979; McLoyd, 1979), identical extrinsic rewards were predicted—and found—to produce precisely opposite effects as a function of the initial interest value of the activity being rewarded. In each experiment, superfluous intrinsic rewards not only undermined interest in initially attractive activities but also enhanced interest in initially boring or unattractive activities, despite major procedural differences across these studies.

Indeed, if one considers effect sizes for reward separately within initial high-interest and initial low-interest conditions, the robustness of the observed interaction is evident. A Q statistic testing whether these six effect sizes came from a single population clearly confirmed that they did not (Q = 24.10, p < .001). The overall effect size for the negative reward effect in the high-interest conditions of these three studies was -1.03, which differed significantly from 0 (p < .001), whereas the overall effect size in the low-interest conditions of these same studies was +0.86, which also differed significantly from 0 (p < .005) but in the opposite direction.

None of these estimates, however, appeared in Cameron and Pierce's (1994) analysis. Instead, these replicable competing effects were "averaged," within studies, across initial task interest, before these studies were even entered into their table of "raw" effect sizes. Not surprisingly, this procedure yielded an obviously nonsignificant average "effect size" of -0.02 for reward in these three studi-