

CHAPTER  
**10**

# Turning “Play” into “Work” and “Work” into “Play”: 25 Years of Research on Intrinsic Versus Extrinsic Motivation

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[Tom] had discovered a great law of human action ... namely, that Work consists of whatever a body is *obliged* to do, and that Play consists of whatever a body is not obliged to do. And this would help him to understand why constructing artificial flowers or performing on a treadmill is work, while rolling ten-pins or climbing Mont Blanc is only amusement.

— Mark Twain, in *The Adventures of Tom Sawyer* (1876)

## INTRODUCTION

For the first half of the 20th century, the study of motivation was dominated by a focus on instrumental learning and extrinsic motivation. From Thorndike's early studies of problem solving in cats (Thorndike, 1911) to the extensive work of Skinner and his students on elementary learning in rats and pigeons (Skinner, 1938, 1953), psychologists interested in motivation

were concerned primarily with the effects of externally imposed instrumental contingencies that linked the receipt of some seemingly arbitrary reinforcer to the performance of some equally arbitrary response. Thus, in this tradition, rats/cats/pigeons could be taught to press bars/nudge panels/peck keys in order to obtain food/water/relief from pain.

From the outset, the power of this approach was evident. By defining reinforcers solely in terms of their demonstrated effectiveness in altering subsequent response probabilities, these theorists were able to finesse an array of problematic conceptual and definitional issues. More important, given this definition, reinforcement procedures frequently produced dramatic effects, and investigators were able to teach animals to perform surprisingly complex sequences of actions. Indeed, in the heyday of these approaches, students in introductory psychology might be shown a film of a white rat, irreverently nicknamed Rodent E. Lee, turning a wheel to raise a miniature Confederate flag, pushing a button to turn on a recording of "Dixie," and rising on its hind paws with one front paw touching its head, as if standing at attention and saluting the flag.

Beginning in the second half of the 20th century, however, psychology began to see the emergence of a variety of challenges to this model. These challenges came from theorists who sought to illustrate and champion various forms of allegedly "intrinsic" motivation—motivations that seemed inherent to engagement in many activities, regardless of the subsequent "extrinsic" rewards or punishments to which those activities might lead in particular situations. We may go bowling, play bridge, read novels, listen to Mozart, or even, as Mark Twain suggested, climb Mont Blanc, for the sheer fun of it—without thought, or so it seemed, of the subsequent instrumental value of these activities.

Indeed, within a short period of time, a number of different types of seemingly intrinsic motivation were independently identified. Four of these that have remained of interest since the 1950s include what we might call the "4 C's" of intrinsic motivation—challenge, curiosity, control, and context. In one very early and influential analysis, for example, White (1959, 1960) described an effectance or mastery motive, suggesting that people deliberately seek out challenges to overcome and new skills to master, simply to experience the pleasure of accomplishment itself. Young children, he noted, routinely invest extraordinary amounts of time and effort in learning to walk, to talk, and to interact to others, and they seem to do so without a great deal of direct instruction or extensive extrinsic reinforcement. About this same time, Berlyne (1960, 1966) began to describe curiosity and related forms of epistemic motivation as inherent to people's constant struggles to make sense of the world around them and as intrinsically rewarding, independent of any additional extrinsic rewards or punishments. Ostentatiously hiding something from a child, he would note, will usually produce a very strong motive in that child to discover what has been hidden.

Similarly, Hunt (1961, 1965)—perhaps the first of these theorists to use the precise term *intrinsic motivation*—focused on what we might now call the motivational value of a sense of control. Elaborating on Piaget’s earlier observations of the systematic experimentation and exploration that even infants seem to engage in time after time, Hunt suggested that humans find the exercise of control over their environment to be inherently motivating. Finally, during this same period, Bruner (1961, 1966) wrote of the importance of the contextualization of learning—of students’ being able to see, for example, the relevance and utility of the skills they are being taught in school for solving problems or accomplishing goals of their own, objectives they would find of inherent personal interest, in the larger world outside of their classrooms.

Once people had begun to contrast these sorts of intrinsic motivations with the kinds of extrinsic motivations that had been central to the Skinnerians and the early social-learning theorists, it was not long before the field of motivation saw the emergence of various hypotheses that these two types of motivation might not always complement one another. Indeed, in the early 1970s, in three different laboratories in three different parts of the world, results were obtained—using different activities, procedures, rewards, contingencies, and subject populations—showing that offering people functionally superfluous extrinsic rewards for engagement in activities of initial inherent interest could undermine their subsequent intrinsic interest in those activities when extrinsic incentives were no longer available or contingent on those activities.

In the present chapter, we review some of the major themes that characterize the quarter century of research on these issues since these early studies. The three major issues we examine involve three potential relationships between intrinsic and extrinsic motivation. First, we examine the experimental literature that has shown that the two may be opposed to one another—in which the imposition of unnecessarily powerful extrinsic contingencies may undermine prior intrinsic interest. We begin, in short, with the study of “intrinsic *versus* extrinsic motivation.” Next, we turn to some more recent literature that has examined real-world situations in which intrinsic and extrinsic motivation may coexist—in which one may assess independently an individual’s levels of “intrinsic *and/or* extrinsic motivation.” Last, we will turn to the final logical possibility—that intrinsic and extrinsic motivation may enhance or complement one another—the case of “intrinsic *plus* extrinsic motivation.”

## INTRINSIC VERSUS EXTRINSIC MOTIVATION

Consider, first, the experimental literature that seems to demonstrate the inherent opposition of intrinsic and extrinsic motivation. In the early 1970s,

Deci (1971, 1972), Kruglanski, Friedman, and Zeevi (1971), and Lepper, Greene, and Nisbett (1973) each independently demonstrated a detrimental effect of the imposition of extrinsic incentives on participants' subsequent intrinsic interest in the activities for which extrinsic incentives had been, but were no longer, available.

### The Original Experiments

Interestingly, in these three early studies, comparable findings were obtained despite striking variations in the specific tasks, rewards, and procedures used in these different investigations. Deci (1971, Experiment 1) offered Carnegie Mellon University undergraduates \$1 for each three-dimensional manipulative puzzle that they correctly solved. Later he covertly observed the amount of time these students chose to spend continuing to work with this same activity, the SOMA Cube, when the experimenter had seemingly left the laboratory and there was no longer any money contingent upon engagement in this activity. Compared with students who had not received payment for working on the same puzzles (or students who had received payment not contingent upon their successful solutions of the problems [Deci, 1972]), students in this extrinsic incentive condition subsequently chose to spend less time with these puzzles once these puzzles no longer had instrumental value. In addition, in a further experiment using this same general paradigm, Deci (1971, Experiment 3) also examined the effects of "verbal rewards" for performance on the SOMA Cube task on subsequent intrinsic motivation. In this condition, after each puzzle solved, students were given (false) feedback that their time to solution was "much better than average" for their peers at Carnegie Mellon. In contrast to the receipt of the tangible reward of money, the receipt of such purely verbal rewards, compared to a no-feedback condition, served to increase, rather than decrease, later intrinsic motivation.

At the same time, halfway around the world, Kruglanski and his collaborators (Kruglanski et al., 1971) offered half of a sample of Israeli high school students an extrinsic incentive, in the form of a personal tour of the research laboratories at nearby Tel Aviv University, for engaging in a series of experimental tasks in the laboratory. Again, compared with students not offered such a contingent reward for their efforts, students in the extrinsic incentive condition described themselves as less interested in the activities. In addition, their performance on the various experimental tasks suffered in several respects. They showed less creativity in listing unusual uses for everyday objects, they displayed lower incidental recall of the activities they had just undertaken, and they proved less likely to show significant "Zeigarnik effects" (i.e., heightened recall for uncompleted or interrupted tasks, indicative of high task involvement).

Finally, in yet a third quite different context, Lepper and his colleagues (Lepper et al., 1973) examined the effects of a superfluous extrinsic incentive on the intrinsic motivation of nursery school children. These children were specifically selected on the basis of their initial high levels of intrinsic interest in drawing pictures with special Magic Marker pens, as determined during baseline free-play periods in their regular preschool classrooms. Subsequently, these children were asked, in individual experimental sessions apart from their classrooms, to engage in the same art activity under one of three conditions. In an expected-award condition, children were first shown a fancy “good player award” and were asked if they would be willing to work on the art activity in order to win one of these awards. In a second, unexpected-award condition, the children received exactly the same award and the same feedback unexpectedly at the end of the experimental session; and in a third, no-award condition, the children received the same verbal feedback but neither expected nor obtained any tangible reward. Two weeks later, the children’s intrinsic interest in the Magic Markers was again assessed covertly in their regular classrooms. As predicted, intrinsic motivation decreased only in the expected-award condition, in which the children had explicitly contracted to engage in the activity in order to obtain a tangible prize.

Given the convergent, comparable results from the tangible-reward conditions of these three initial studies—obtained across quite different procedures, extrinsic incentives, dependent measures, subject populations, and the like—one might have expected these early studies to have produced some consensus that superfluous extrinsic incentives can indeed undermine prior intrinsic motivation. Instead, these early findings were met with considerable resistance and have led to an extensive and continuing controversy, since the mid-1970s, concerning the exact conditions under which extrinsic rewards and punishments will have either positive or negative effects on intrinsic motivation.

### Later Experimental Literature

Since the mid-1970s, more than 100 additional experiments have been reported in this area—extending, qualifying, and sometimes challenging the results from the first studies in this field. Nonetheless, these initial three studies alone presage most of the important distinctions and conclusions that characterize the decades of research that followed them. Thus, these early experiments explicitly demonstrated the importance of reward contingency, of expectation of reward, and of tangibility of reward in determining whether a particular reward manipulation will be likely to undermine, enhance, or have no effect on subsequent intrinsic motivation—each of which has been borne out as an important variable in subsequent research.

That is, virtually every review of this literature seems to have agreed—all else being held constant—on three basic propositions:

- That noncontingent extrinsic rewards will be less likely to produce detrimental effects and more likely to produce beneficial effects on later intrinsic motivation than otherwise identical rewards that are contingent on task engagement or task completion (and under some conditions, on task performance)
- That unexpected extrinsic rewards will be less likely to produce negative and more likely to produce positive effects on intrinsic motivation than otherwise identical rewards that are expected
- That extrinsic rewards that are intangible (e.g., diffuse, implicit, social, verbal) will be less likely to produce adverse effects and more likely to produce facilitative effects than otherwise comparable rewards that are more tangible.<sup>1</sup>

Also more implicit in these early studies was a fourth proposition—that rewards that provide salient evidence of one's competence or ability at an activity will have more positive (or less negative) effects on intrinsic motivation than will rewards that do not provide such information. Consider the comparison between the monetary reward Deci employed in Experiment 1 (i.e., \$1 for each correctly completed design) and the "verbal reward" he employed in Experiment 3 (i.e., being given highly positive feedback, such as "That's very good. That's much better than average for this configuration" after each correctly completed design). In later writings, many authors, including Deci himself, have focused on the additional informational value of the positive feedback in the verbal reward condition concerning the participant's competence at the activity as a critical factor in the greater intrinsic motivation shown by this group (e.g., Condry, 1977; Deci & Ryan, 1985; Lepper & Greene, 1978; chapter 4, this book).

Finally, although shortly after the initial studies, a number of different investigators explicitly demonstrated the importance of high initial task interest that had been presumed in the deliberate selection of activities of high intrinsic interest to participants in the original experiments. Thus, a number of subsequent studies—once again using different participants, activities, rewards, and specific procedures—have supported a fifth proposi-

<sup>1</sup> In fact, it may be worth noting that it is virtually impossible to create an ecologically valid version of a purely verbal "expected reward" that would have the same degree of specificity as a comparable tangible expected reward. To learn that one will be paid precisely \$5 is potentially quite different than to learn that some other person will be "quite pleased" with one, in that the latter remains significantly more ambiguous. *How pleased?* or *With what effect?* one might still wonder. Were a person actually told that the other person will "tell you that you are 'very smart,'" the procedure would be somewhat more comparable, but this would be extremely unusual in everyday discourse.

tion, that identical expected tangible rewards can both undermine participants' intrinsic motivation in tasks designed or selected to be of high initial interest yet enhance participants' interest in tasks designed or selected to be of little or no initial interest (e.g., Calder & Staw, 1975; Danner & Lonky, 1981; Loveland & Olley, 1979; McLoyd, 1979; Newman & Layton, 1984).

In more explicitly theoretical terms, we believe that it is possible to summarize most of the existing literature on the effects of rewards on later motivation in terms of three potentially distinct conceptual variables (Lepper & Gilovich, 1981; Lepper & Greene, 1978), as illustrated schematically in Figure 10.1.

### **Perceptions of Continued Instrumental Value**

First, as shown in the upper one third of Figure 10.1, the receipt of extrinsic rewards may convey information about the likelihood of further tangible or social extrinsic rewards in related situations in the future. Having received a tangible reward for some particular activity or accomplishment in one setting, one may often come to expect some comparable instrumental payoff for a similar activity or accomplishment in the future, at least in psychologically similar situations. Moreover, even if tangible rewards may no longer be available, the receipt of such a reward from some particular individual, group, or institution may convey information that that same individual, group, or institution (and perhaps related others) would be pleased by, and likely to approve of, one's engagement in similar tasks or achievement of similar goals in the future. Such expectations of continued extrinsic tangible or social payoffs in the future, then, may provide continued extrinsic motivation for the individual to continue to engage in a previously rewarded activity, whether or not that activity is of any intrinsic interest to the person.

### **Perceptions of Personal Competence**

Second, as depicted in the middle one third of Figure 10.1, extrinsic rewards may also convey information about one's level of mastery of, or ability at, a particular task, or one's more general personal competence. The receipt of rewards or other feedback that enhances an individual's perceptions of competence may influence both that person's later intrinsic and later extrinsic motivation. On the one hand, other things being equal, increases in perceived competence at an activity will generally lead to corresponding increases in intrinsic motivation, at least when doing well is salient or important (Sansone, 1986)—that is, people tend to like things they think they are good at. On the other hand, increases in perceived competence may also make a person more likely to attempt or persevere at activities for which extrinsic rewards are anticipated to be available only for specific lev-

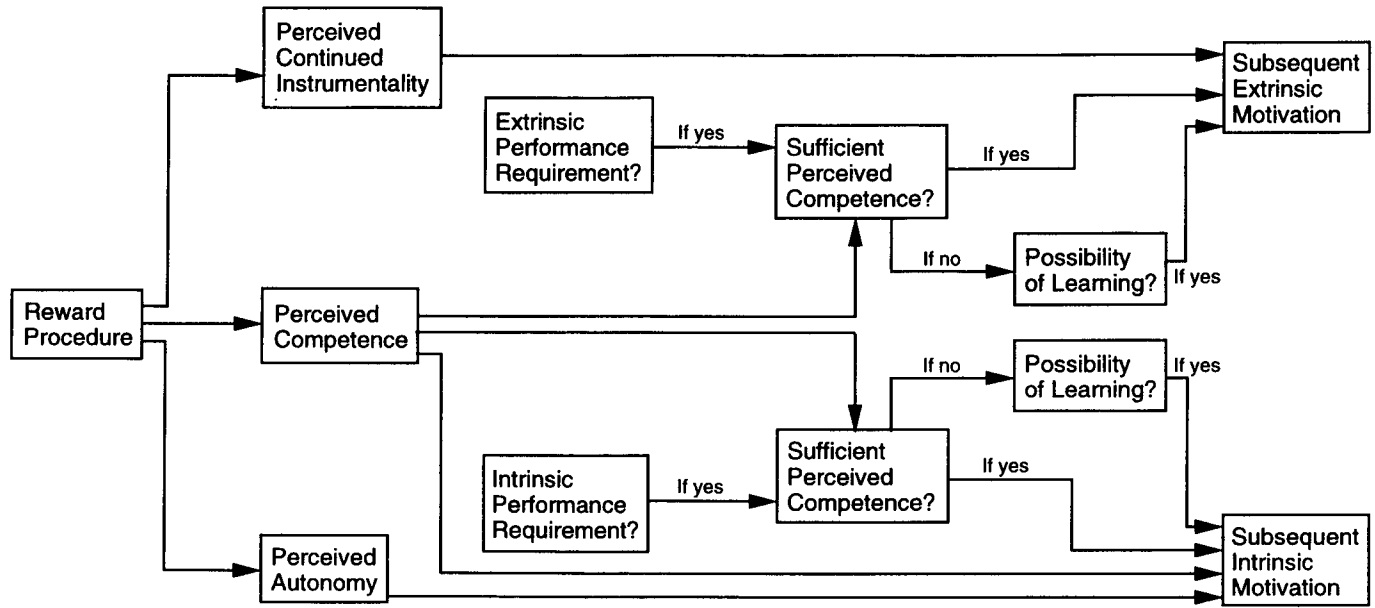


FIGURE 10.1

A schematic view of how rewards may affect subsequent intrinsic and extrinsic motivation via the conceptual variables of perceived continued instrumentality, perceived competence, and perceived autonomy.

els of performance. Both such effects should, of course, be especially likely when later intrinsic, or extrinsic, rewards are seen as requiring high levels of performance or success relative to others. Such perceptions, in turn, are more likely if prior rewards had been made contingent upon some criterion of excellence than if those rewards had depended merely on task engagement or task completion.

### Perceptions of External Control

Finally, the receipt of extrinsic rewards may, in addition, convey information about one's level of personal control or autonomy in that setting, as illustrated in the lower one third of Figure 10.1. All else held constant, the receipt of rewards that lead people to view their actions as having been extrinsically motivated—that lead people to feel like "pawns" rather than "origins" of their own actions (deCharms, 1968)—may undermine subsequent intrinsic motivation. This should be particularly likely when rewards are expected, tangible, salient, and superfluous, as well as when rewards are accompanied by other forms of extrinsic constraint that may heighten perceptions of external control, such as close surveillance (Lepper & Greene, 1975), temporal deadlines (Amabile, DeJong, & Lepper, 1976), or statements of obligation (Pittman, Davey, Alafat, Wetherill, & Kramer, 1980; Ryan, 1982). Under such circumstances, people will be less likely to engage in similar activities in future situations in which they no longer expect further tangible or social extrinsic rewards to be contingent upon those actions.

With these three factors, one can derive the central findings of the literature outlined above, as has been described in greater detail elsewhere (e.g., Lepper, 1981; Lepper & Gilovich, 1981). In addition, one can predict that the effects of expected tangible rewards will be most variable when the receipt of a reward simultaneously increases both perceptions of personal competence (thereby, *ceteris paribus*, increasing later intrinsic motivation) and perceptions of external control (thereby, *ceteris paribus*, decreasing later intrinsic motivation). In such situations, the net effect of the reward procedure will depend on the relative magnitudes of these two competing effects. Certainly, this prediction concerning the potential variability of the effects of such rewards seems to us borne out by the conflicting findings concerning such procedures since the 1970s (e.g., Boggiano & Ruble, 1979; Deci, Koestner, & Ryan, 1999; Greene & Lepper, 1974; Harackiewicz, 1979; Harackiewicz, Manderlink, & Sansone, 1984).

It is worth explicitly noting, however, the contrast between "relative" versus "absolute" predictions that can be derived from this model, as well as other related analyses (e.g., Deci, 1975; Deci & Ryan, 1985). Whereas it is easy to generate clear predictions, under controlled conditions, about the relative effects of different reward procedures—for example, expected ver-

sus unexpected, contingent versus noncontingent, or highly informative versus uninformative rewards—it is much more difficult to generate unequivocal predictions concerning the absolute effects of any particular reward procedure (compared, for instance, to a no-reward control group or to baseline levels). This is because a single reward manipulation may produce explicitly opposing effects via our three conceptual variables.

Moreover, other factors may also determine the absolute level of motivation among previously rewarded subjects, compared with others who received no rewards at all. For example, if a particular reward procedure produces an increase in the amount of time spent with the activity, that increase in sheer time on task may have at least short-term positive (via mere exposure and enhanced familiarity) or negative (via boredom or satiation) motivational consequences. Similarly, if a specific reward procedure has either a positive or a negative effect on the quality of immediate task performance, such differences in task performance may themselves exert corresponding influences on later motivation. Finally, and most important, if a given reward procedure leads to changes in either the quality or the amount of task engagement that prove sufficient to produce an improvement in task-relevant skills or knowledge, such increases in actual capabilities would be expected to have long-term beneficial effects on both later intrinsic and later extrinsic motivation. (See Lepper and Gilovich [1981] for a more extended analysis of these sorts of “task performance” effects.)

Finally, a consideration of these three determinants of the effects of extrinsic rewards on later intrinsic and extrinsic motivation also permits us to predict and understand a variety of other theoretically significant findings that appear in the later literature on this topic. Such an analysis would predict, first, that extrinsic rewards or feedback presented in a manner that highlights their use as external controls or constraints can decrease later intrinsic motivation, whereas identical extrinsic rewards or feedback presented as indicators of personal competence can instead increase later intrinsic motivation (e.g., Pittman et al., 1980; Ryan, Mims, & Koestner, 1983). This analysis would also predict that even highly controlling extrinsic rewards may not have the otherwise predicted negative effects on intrinsic motivation if participants are explicitly reminded of (Fazio, 1981) or are given false feedback about (Pittman, Cooper, & Smith, 1977) their actual initial intrinsic motivation. Similarly, an objectively unexpected reward should have the same detrimental effect as its expected counterpart, if people are (falsely) persuaded that the reward had been offered earlier and they had been expecting it all along (Kruglanski, Alon, & Lewis, 1972). Finally, this model would also account for an array of experiments showing comparable detrimental effects on subsequent intrinsic motivation of a variety of other forms of external constraint not involving the use of rewards per se, such as temporal deadlines (Amabile et al., 1976), threats of punishment (Deci & Cascio, 1972), unnecessarily close adult surveillance (Lepper & Greene,

1975), or the mere presentation of some activities as "means" and others as "ends" (Lepper, Sagotsky, Dafoe, & Greene, 1982).<sup>2</sup>

In summary, it seems to us, as it did to Deci and colleagues (1999), that the experimental literature on the potentially deleterious effects of superfluous extrinsic rewards on subsequent intrinsic motivation does indeed provide a reasonably "clear and reliable" set of findings. As shown schematically in Figure 10.1, there are a number of processes by which rewards may influence a person's later intrinsic, and extrinsic, motivation (Lepper, 1988; Lepper & Gilovich, 1981; chapters 1 and 2, this book). Hence, the detrimental effects of decreases in perceived autonomy should be most evident when one has controlled both for the effects of potential differences in perceptions of continued instrumentality (e.g., by observing later behavior in settings in which it is clear that the previously rewarded activity will no longer yield further tangible, or social, rewards) and for the effects of potential differences in perceptions of personal competence (e.g., by examining the effects of reward procedures that do not convey differential information about a person's ability). Under these conditions, the imposition of superfluous and tangible extrinsic rewards will produce decreases in subsequent intrinsic motivation, as first shown in the early studies by Deci (1971), Kruglanski and associates (1971), and Lepper and colleagues (1973).

### Meta-analytical Analyses

Despite the apparent consistency of most of the findings in this literature, particularly the results of studies involving children (Deci & Ryan, 1985, 1991; Lepper & Gilovich, 1981; Lepper & Hodell, 1989; Quattrone, 1985),<sup>3</sup>

<sup>2</sup> In particular, in what might be viewed as a paradigmatic demonstration of the effects of perceptions of external control per se, Lepper et al. (1982) examined the differential effects of the imposition of a purely nominal contingency on children's engagement in two activities of high and identical initial interest. Thus, in a "means-end" condition, children were confronted with two activities deliberately selected to be of equally high initial intrinsic interest to them and were told that they could "win a chance" to engage in one of these activities (i.e., the end) only if they first engaged in the other of these activities (i.e., the means). The nominal "reward" in this procedure, in short, was of no greater value than the activity required to obtain that "reward." In a control condition, by contrast, the children simply engaged in the two activities without any stated contingency between the two. Two weeks later, these two activities were again presented during scheduled free-play periods in the children's regular classrooms, to assess the effects on children's subsequent intrinsic motivation. As predicted, children in the means-end condition, relative to their counterparts in the control condition, showed decreased interest in the activity that had been presented as a means but increased interest in the activity that had been presented as an end—a pattern of results that has been replicated by a number of investigators in different domains (e.g., Birch, Birch, Marlin, & Kramer, 1982; Birch, Marlin, & Rotter, 1984; Newman & Taylor, 1992).

<sup>3</sup> It may be of some interest to note that the detrimental effects of superfluous extrinsic rewards seem significantly greater with children than with adult subjects (Deci et al., 1999). Whether this is due to differences in the interpretations these two populations characteristically place on the offer of tangible rewards, differences in the normative expectations of these two groups, or other differences in experimental procedures remains to be studied.

it is hard to present any review of this work without considering the recent plethora of meta-analyses of this literature (Cameron & Pierce, 1994; Deci, Koestner, & Ryan, 1999; Eisenberger & Cameron, 1996; Rummel & Feinberg, 1988; Tang & Hall, 1995) that have evoked such substantial controversy and concern (Hennessey & Amabile, 1998; Kohn, 1996; Lepper, 1995, 1998; Lepper, Henderlong, & Gingras, 1999; Lepper, Keavney, & Drake, 1996; Ryan & Deci, 1996; Sansone & Harackiewicz, 1998). As with the original empirical studies in this field, the idea of using meta-analytical techniques in reviewing this literature seems to have independently occurred to a number of different authors at approximately the same time. In sharp contrast to the original experimental studies in this area, however, there has been considerably less agreement in the conclusions reached by these different meta-analyses.

Basically, these more recent statistical summaries fall into two camps. On the one hand, several of these meta-analyses (Deci et al., 1999; Rummel & Feinberg, 1988; Tang & Hall, 1995) provided general support for the conclusions reported above and in previous narrative reviews of this literature. Thus, Deci et al. (1999) described the detrimental effects of extrinsic rewards on intrinsic motivation, under the conditions discussed earlier, as displaying "clear and reliable" effects, and Tang and Hall (1995) concluded that such detrimental effects appear "when they should," as predicted by the factors described above. By contrast, "two" other closely related meta-analyses (Cameron & Pierce, 1994; Eisenberger & Cameron, 1996) reported similar conclusions regarding a number of specific questions but continually emphasize a simple "summary" of their findings as indicating that there are no systematic "general" or "overall" effects of rewards on intrinsic motivation. Specifically, these authors argued that rewards have detrimental effects only under very limited conditions that rarely occur and can easily be avoided in the real world, and therefore that conclusions about real-world detrimental effects of rewards on intrinsic motivation are merely a "myth."<sup>4</sup>

Our response to these meta-analyses, and especially to the assertions of these latter reviewers, is twofold (Lepper et al., 1999). First, we believe that this literature has a number of characteristics that make the use of *any* meta-analytical procedure problematic and suspect. Second, we believe that the specific meta-analytical procedures used by Cameron and her colleagues further exacerbate the inherent general difficulties of applying meta-analysis to this particular research domain.

Consider, then, some of the more general arguments against the possibility of using meta-analytical procedures effectively on this particular

<sup>4</sup> Our discussion here focuses more on the earlier Cameron and Pierce article (1994) than the later Eisenberger and Cameron article (1996), simply because the former provides details on the analyses employed with different individual studies and the latter does not.

research literature (Lepper, 1995). In the first place, it makes almost no sense to consider the set of studies that have been performed and published to constitute a random or representative sample of any meaningful larger population of reward procedures in the real world. Because of the theoretical nature of this literature and the early recognition by most researchers that rewards could have both positive and negative effects on motivation—depending on the situation—virtually every relevant study was deliberately designed to test some statistical interaction prediction. In some cases, researchers sought to illustrate explicitly that rewards would produce opposite effects (i.e., a full crossover interaction design) under different specified conditions; in other cases, they sought to show that rewards would produce a particular effect under specified conditions but would not produce any difference when some theoretically critical ingredient had been changed (i.e., an experimental-versus-control interaction design). Staw, Calder, Hess, and Sandelands (1980), to take but one example, showed that the same extrinsic reward could enhance intrinsic motivation in situations in which rewards were seen as normative but could undermine intrinsic motivation in situations in which rewards were seen as non-normative. Hence, any main-effect analysis that fails to separate such cases and instead averages across different findings within an experiment to summarize crossover interactions as “no” overall effects or experimental/control interactions as “weak” or “nonsignificant” overall effects will necessarily yield misleading and generally meaningless results.

Similarly, in this literature, there are many “singular” studies—studies that employ procedures of particular theoretical significance that neither mirror any real-world situation nor warrant further investigation once an initial demonstration has been reported. In some studies, as noted earlier, various “false feedback” techniques have been used to test a range of theoretical assertions. Thus, in one study, children receiving an objectively unexpected reward were falsely told that this reward was one that had been promised to them earlier—to show that the mere perception of having engaged in an interesting activity in order to obtain that reward would result in the sorts of negative effects normally produced only by expected awards (Kruglanski et al., 1972). Likewise, in another study, students promised a salient extrinsic reward for engaging in a task of initial intrinsic interest were hooked up to an alleged physiological monitoring device that showed them to be displaying either high levels of interest in the activity itself or high levels of interest in the reward to which engagement in the activity would lead (Pittman et al., 1977). Because of their singularity, such studies can be entered into traditional meta-analyses only as additional instances of the very conditions from which they were explicitly designed to differ.

There are other problematic aspects to this literature as well. There happen to be, for instance, many strong correlations across the available

studies among theoretically relevant independent variables, dependent measures, subject populations, and specific procedures. Virtually all studies involving “verbal rewards,” for example, also happen to involve highly informative rewards, unexpected rewards, adult subjects, and short-term measures of choice. In addition, the substantial variations in the measures of intrinsic motivation used in this literature tend to ensure that there will be a negative correlation between the actual practical significance or “functional effect size” of a finding and its “statistical effect size” (Lepper, 1995), because measures that involve more consequential behaviors, which occur days or weeks later and which take place in real-world settings in which many competing pressures are present, will, all else being equal, tend to produce effects that are both more practically important and less statistically significant than simple self-reports obtained in laboratory settings immediately afterward. In general, then, there is no reason to assume—and there is good reason to reject the assumption—that the studies that comprise this literature involve a representative or random sampling of the ways or contexts or forms in which rewards are likely to be used in any class of real-world settings to which the results of any meta-analysis might be appropriately generalized.

Moreover, these general problems are multiplied exponentially by a number of the specific techniques employed in the meta-analyses by Cameron and associates (Cameron & Pierce, 1994; Eisenberger & Cameron, 1996)—particularly their practices of averaging both across demonstrably opposite and competing effects and across deliberately designed experimental and control groups within studies and then averaging yet again across different types of studies that have been shown to produce different outcomes. Thus, in nearly three quarters of the articles cited by Cameron and Pierce (1994), their meta-analytical summaries of the studies averaged across either opposing effects or experimental and control groups. To take but one salient illustration, four different studies (by different researchers) reviewed by Cameron and Pierce showed identical crossover interactions between expectation of reward and the initial interest value of the task—that the same reward manipulation may decrease subsequent motivation for initially interesting tasks but increase subsequent motivation for initially uninteresting tasks (Calder & Staw, 1975; Danner & Lonky, 1981; Loveland & Olley, 1979; McLoyd, 1979). In each case, Cameron and Pierce ignored these competing effects, averaged across the positive versus negative effects of rewards under the different interest conditions, and argued that each of these studies showed no “overall” effect of rewards.

The magnitude of these difficulties can perhaps be illustrated by a simple analogy. Imagine a pharmaceuticals company with a highly promising new drug to sell—one that grows hair, perhaps, or removes wrinkles. However, the company must first do the requisite literature review to

determine whether there are any untoward or dangerous side effects. Were the company to try to summarize a literature in which strong and replicable interactions had been shown (e.g., in which the risks of heart attacks were increased for men or for patients with hypertension but were decreased for women or for those without hypertension—or vice versa) as showing no evidence of negative side effects "overall," the government would have strong cause for legal action against the company for fraudulent claims. Conversely, the company would itself have legal recourse were the government to try to summarize studies that had been specifically designed to examine the mechanism of the drug's operation and in which theoretically designed control conditions were employed to show that the drug's effects could be effectively blocked by some relevant inhibitory chemical, as evidence that the drug did not "in general" produce significant benefits for patients.

Other specific problems with the Cameron reviews (Cameron & Pierce, 1994; Eisenberger & Cameron, 1996) have been detailed elsewhere (Deci et al., 1999; Hennessey & Amabile, 1998; Kohn, 1996; Lepper, 1995, 1998; Lepper et al., 1999; Lepper et al., 1996; Ryan & Deci, 1996; Sansone & Harackiewicz, 1998) and are not discussed further here. Suffice it to say that we do not believe that the grand general conclusions that have been drawn from these reviews, and that provide so clear a contrast with the conclusions of other meta-analytical and traditional reviews, have any merit.

Nonetheless, one general caution about any summary of this literature may be in order. At the same time that the research concerning the potential detrimental effects of extrinsic rewards and constraints on intrinsic motivation has failed to impress behavioristically oriented opponents of this literature, such as Cameron and her colleagues, it has clearly overimpressed others. Certainly, a number of misleadingly broad claims about the strength and ubiquity of the negative effects of rewards have been made, particularly in the popular press. In our view, grand and sweeping claims on *either* side of the issue fail to recognize the demonstrated existence of both positive and negative effects of rewards, under appropriate circumstances, and thus fail to provide a fair and accurate summary of this literature.

### **Scales of Intrinsic versus Extrinsic Motivation**

Indeed, in quite a different sense, the more recent literature concerning the development of scales to measure people's general levels of intrinsic and extrinsic motivation might be viewed as tending to overgeneralize the experimental findings that extrinsic rewards may sometimes undermine intrinsic motivation. Consider, for example, the design of individual-difference scales that require individuals to identify themselves as *either* intrinsically or extrinsically motivated.

Of the various scales of intrinsic motivation that have been developed, by far the most prominent has been that designed by Harter (1980, 1981). In this scale, children are presented with a series of items, each of which contrasts two “types” of pupils facing some common school-related situation—one of whom is intrinsically motivated and the other of whom is extrinsically motivated. For each item, respondents are asked to indicate which type of person they most closely resemble and how much they feel they resemble that type. For example, children are asked to consider that “Some kids ask questions in class because they want to learn new things” but “Other kids ask questions because they want the teacher to notice them.” They are then asked which type of child is most like them and, once they have made this choice, whether they think that their choice is “really true of me” or only “sort of true of me.”

Three subscales, each addressing a different source of intrinsic motivation, comprise the motivational aspect of Harter’s (1980, 1981) instrument. A first component contrasts a preference for challenging but difficult tasks with a preference for unchallenging assignments at which it is easy to succeed. The second component contrasts a focus on curiosity and interest in the material itself with a focus on teacher approval and good grades. The third and final component pits a desire for independent mastery against a tendency to depend on the teacher to define goals and identify accomplishments. Across a variety of these sorts of items, a student’s answers are taken as a measure of his or her general intrinsic versus extrinsic motivational orientation in school.

With such a scale, of course, it is simply not possible for children to report themselves to be both intrinsically and extrinsically motivated in a given situation. A child cannot, on this measure, want to do further readings on a topic both out of curiosity about the topic and out of a desire to please the teacher. One cannot separately assess a person’s intrinsic motivation and extrinsic motivation because the scale has built into it a perfect negative correlation between the two.

Nonetheless, Harter (1980, 1981) and others using her pioneering scale with elementary and middle-school children (e.g., Newman, 1990; Tzuriel, 1989) have uncovered some findings of both theoretical interest and potential practical importance, especially concerning changes in students’ motivation that appear to occur, at least in our country, as children progress through school. Specifically, in the United States, as children move from the third through the eighth or ninth grade, they appear progressively less likely to describe themselves as intrinsically motivated about their schoolwork. It seems that the more time children spend in schools in our country, the less interest they have in learning for its own sake.

Because of related findings to which we will shortly turn, it seems likely that a steady decrease in intrinsic motivation as children progress through school is indeed the best interpretation of these findings. In principle, however, this same pattern of results using this measure could be equally well interpreted as showing a steady *increase* in *extrinsic* motivation as children

progress through these grades. Hence, an analysis of these questions that would permit independent assessments of intrinsic and extrinsic motivation, without forcing a strictly inverse relationship between the two, might uncover important new areas for investigation.

## INTRINSIC AND/OR EXTRINSIC MOTIVATION

Consider, then, the possibility that intrinsic and extrinsic motivation may coexist. Most academicians, for example, can easily remember cases in which they may have read books both because of the inherent pleasure in doing so (intrinsic motivation) and out of a desire to gain a teacher’s or a parent’s approval (extrinsic motivation). Obviously, it would be inappropriate to label such behaviors as either exclusively intrinsically or exclusively extrinsically motivated; both forces are clearly at work. Indeed, one actually may read more books or do so more carefully precisely *because* these forces are operating in tandem. Thus, like a number of other contributors to this book (e.g., Sansone & Harackiewicz [chapter 1], this book; Linnenbrink & Pintrich [chapter 8], this book), we think—despite the experimental demonstrations that superfluous extrinsic contingencies *can* undermine intrinsic interest in controlled experimental contexts—that intrinsic and extrinsic motivation may, in many real-world settings, exert simultaneous positive influences on behavior.

In fact, even the experimental literature on overjustification suggests that intrinsic and extrinsic motivation *ought* frequently to coexist. As noted earlier, we know from this research that extrinsic rewards that provide salient information about one’s competence at an activity or are presented in a manner that highlights their informational value can actually enhance intrinsic motivation (e.g., chapter 4, this book). Likewise, we know that extrinsic rewards that are verbal, less tangible, unexpected, or noncontingent will not typically undermine intrinsic interest (e.g., chapter 2, this book). Thus, many common real-world extrinsic rewards, such as grades or teacher approval in school, may not necessarily undermine (or may even facilitate) intrinsic motivation, depending on the specifics of the rewards, contingencies, manner of administration, and the like used in any particular classroom situation.

Interestingly, although Harter’s scale did not allow for an independent assessment of intrinsic and extrinsic motivation, Harter herself acknowledged the possibility of “situations in which intrinsic interest and extrinsic rewards might collaborate, as it were, to motivate learning” (1981, p. 311; see also Harter & Jackson, 1992). In fact, although Harter’s scale was specifically designed to assess intrinsic *versus* extrinsic motivation, one can imagine using an adaptation of her scale to assess whether a child is intrinsically *and/or* extrinsically motivated in school. That is, if Harter’s own scale were simply recast so that children’s responses to her intrinsic and extrinsic items were

made independent of one another, one could determine the degree to which these sources of motivation empirically coexist in common school settings.

There are, of course, some potential theoretical pitfalls to such an approach. Given the particular way in which Harter devised her scale, some of its three specific components seem much more amenable to this coexistence argument than others. One might have a fairly difficult time, for example, reconciling a simultaneous preference both for challenge and for easy work, unless the situations and tasks involved were more highly specified. On the other hand, it seems quite possible that a child may act out of curiosity or interest while concurrently hoping to please the teacher or receive a good grade. To take one example from Harter's "curiosity" scale, children might choose to do extra projects both "because they learn about things that interest them" and "so they can get better grades." One also can make a fairly easy coexistence argument for the dimension of independent mastery versus dependence on the teacher. For example, Harter asked children whether, when faced with a difficult problem, they would "keep trying to figure out the problem on their own" or to "ask the teacher for help." It is not difficult to imagine children who have a desire to master a task on their own but are wise enough to turn to the teacher when their own efforts are no longer fruitful. Such children might persist in the name of independent mastery only for so long before seeking outside assistance, and their doing so would not then necessarily connote an exclusively extrinsic orientation (cf. Butler & Neuman, 1995).<sup>5</sup>

<sup>5</sup> Moreover, it may be important to recognize several additional characteristics of Harter's (1980, 1981) scale. First, her conceptual definition of *challenge* might be expanded to recognize that tasks that are "too hard" as well as "too easy" may not be intrinsically motivating (e.g., Csikszentmihalyi, 1975; Hunt, 1961; McClelland, Atkinson, Clark, & Lowell, 1953; Malone & Lepper, 1987). That is, in Harter's scale, a desire for challenge is contrasted only with a desire for easy work, and not also with a desire for tasks that are so impossibly difficult that they would not be diagnostic of competence or mastery. An ideal assessment tool might include both ends of this spectrum. Second, although Harter's category of *curiosity* jibes with classic motivational theory (e.g., Berlyne, 1960, 1966; Hunt, 1961, 1965), the "contrasting half" of this dimension may be problematic. In Harter's scale, it is assumed not only that curiosity or interest and a desire to please the teacher or receive good grades are inversely related but also that these latter desires are necessarily extrinsic in nature. In fact, desiring good grades could be either extrinsic (if children seek good marks only to satisfy their parents or to please their teachers) or intrinsic (if children seek them not to post proudly on the refrigerator but simply as evidence concerning their level of competence and accomplishment in a given domain). In this latter sense, even less-than-perfect grades may affect intrinsic motivation by serving to indicate the areas of study that may need improvement. Third, in Harter's category of "independent mastery," although there are hints of classic motivational theories about the effectiveness of personal control and self-determination (e.g., Condry, 1977; Deci, 1981; Deci & Ryan, 1985), such a "desire for autonomy" may not be fully instantiated in the actual questionnaire. Rather than asking children about a desire to make their own choices or to control their academic outcomes, Harter's questions ask primarily about a desire to persist at and complete assignments without help. However, it is not at all clear that intrinsic motivation requires such complete independence. Presumably children could be intrinsically motivated but still recognize a need for assistance when problems become too complex for them.

## New Empirical Findings

In view of these considerations, Lepper, Sethi, Dialdin, and Drake (1997) have sought to examine whether Harter's (1980, 1981) scale could indeed be sensibly decomposed to yield separate measures of children's intrinsic motivation and extrinsic motivation. In their study, several hundred third-grade through eighth-grade children were administered a version of Harter's scale that, rather than forcing them to make a choice, allowed them to answer intrinsic and extrinsic items independently of one another. For example, Harter's original item that asked children to choose whether they were more like kids "who do extra projects because they learn about things that interest them" or more like kids "who do extra projects so they can get better grades" was transformed into two separate items, each with a five-point Likert scale. This modification of Harter's scale, as shown in Figure 10.2, allowed for the possibility that children might be simultaneously intrinsically and extrinsically motivated.

Using this modified scale, Lepper and colleagues (1997) indeed found that intrinsic and extrinsic motivation, when assessed with separate items, proved far from perfectly negatively correlated. Summing across subscales, they found a statistically significant but relatively weak negative correlation between overall intrinsic and overall extrinsic motivation ( $r = -.14$ ;  $p < .01$ ). Clearly, the general assumption that these two constructs must be mutually exclusive proved unfounded. Furthermore, the relationship between intrinsic and extrinsic motivation varied for the three components of the general scale. Thus, there was indeed a fairly strong negative correlation between a preference for challenge and a preference for easy work ( $r = -.53$ ;  $p < .0001$ ), as speculated above. There was, however, a highly significant *positive* correlation between curiosity/interest and attempting to please the teacher or receive a good grade ( $r = .22$ ;  $p < .001$ ), and only a slight negative correlation between independent mastery and dependence on the teacher ( $r = -.16$ ;  $p < .01$ ). In short, only the contrast between the intrinsic component of preference for challenge and the extrinsic component of preference for easy work even comes close to approaching mutual exclusivity.

More recently, we have attempted to replicate these findings with a sample of 337 third- through eighth-grade children from two large parochial schools in the San Francisco Bay area (Henderlong & Lepper, 1997, 2000). As before, Harter's items were decomposed and both halves of each item were presented separately, with a 5-point Likert scale on which to indicate agreement. Again, the results were consistent with the coexistence argument. Overall, the correlation between intrinsic and extrinsic motivation was negative and significant, but again, it accounted for only a small fraction of the variance ( $r = -.17$ ;  $p < .01$ ). The relationship between intrinsic and extrinsic motivation was also examined separately for the three component measures. In this new sample, once again there was a significant negative correlation between a preference for challenge and a preference for easy

Sample Item from Harter's (1980) Scale of Intrinsic vs. Extrinsic Motivational Orientation:

Really True for Me	Sort of True for Me	Some kids do extra projects because they can learn about things that interest them	BUT	Other kids do extra projects so they can get better grades	Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>

Sample Item Above Decomposed into Separate Scales for Intrinsic and Extrinsic Motivation:

Intrinsic Item:

I do extra projects because I can learn about things that interest me.

Extrinsic Item:

I do extra projects so I can get better grades.

FIGURE 10.2

Sample item from scale of intrinsic versus extrinsic motivational orientation, from Harter (1980). (Copyright © 1980 by Susan Harter, University of Denver. Adapted with permission.) Below a decomposition of this item, from Lepper et al. (1997).

work ( $r = -.35, p < .001$ ). The relationship between curiosity/interest and desire for teacher approval was again positive ( $r = .10$ ), but this time was only marginally significant ( $p < .06$ ). Finally, the correlation between independent mastery and dependence on the teacher was again negative but

also quite small ( $r = -.12$ ;  $p < .05$ ). Intrinsic and extrinsic motivation, in short, can clearly coexist in the real world outside the laboratory.

### Developmental Trends

Both of these studies, moreover, were designed not only to assess the correlations between independent measures of intrinsic and extrinsic motivation but also to revisit the strong and provocative developmental findings from Harter's initial study (1980, 1981)—namely, that intrinsic motivation seemed to decrease steadily as children progressed from third grade through eighth or ninth grade, as portrayed in Figure 10.3. These developmental comparisons, in turn, provided yet another opportunity to explore the complementary or oppositional nature of these two constructs. If intrinsic and extrinsic motivation are truly mutually exclusive, a developmental increase in one would necessarily lead to a developmental decrease in the other. If the two can coexist in the classroom, however, the developmental trajectories of the two may be separate and, in a sense, doubly informative.

As noted earlier, Harter's original scale could not rule out an obvious potential alternative interpretation for the apparent decrease in intrinsic

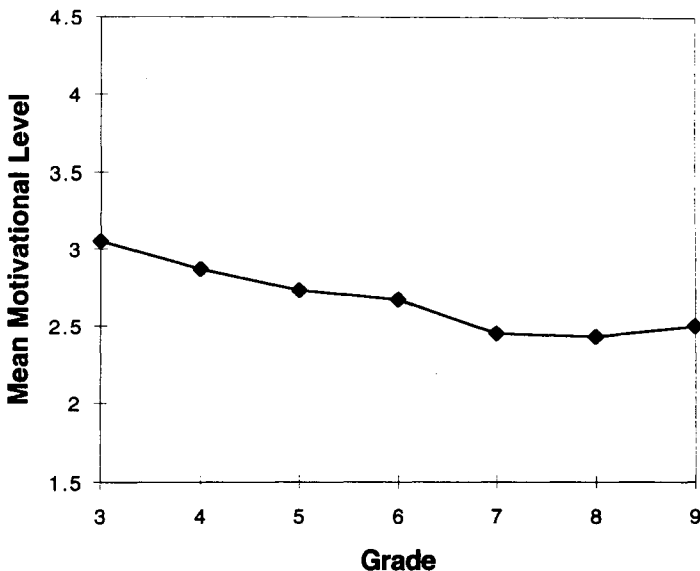


FIGURE 10.3

Overall intrinsic versus extrinsic motivation, by grade, from Harter (1980). (Copyright © 1980 by Susan Harter, University of Denver. Adapted with permission.)

motivation as children progressed through the grades. The seeming developmental *decrease* in intrinsic motivation could also have been produced by a developmental *increase* in extrinsic motivation. Perhaps, as children progress through school, there is an increasing emphasis on external contingencies, such as performing well to receive good grades, achieving to please one's parents, and memorizing material merely to do well on examinations. Such an explanation would, of course, have quite different implications than one that emphasized an increasingly severe lack of internal motivation as children progress through school. Clearly, then, there seemed to be considerable value in looking separately at the development of intrinsic and extrinsic motivation across this grade range.

Examining these issues using the decomposed version of Harter's scale, Lepper and his colleagues (1997) found a strong developmental decrease over grades three through eight, both on the composite measure of students' overall intrinsic motivation and on each of the three component measures, just as Harter's original analysis had suggested. On the other hand, in contrast to Harter's original analysis, these students' extrinsic motivation remained roughly constant across this same age range. The only extrinsic component measure that showed any significant developmental change was that of desire for teacher approval, which actually *decreased* from third to eighth grade. Thus, these findings both replicate Harter's original conclusion that intrinsic motivation steadily decreases as children progress through school and eliminate the alternative explanation that an increase in extrinsic motivation could be driving this effect. In addition, they provide further evidence that intrinsic and extrinsic motivation can and do coexist, at least in American elementary-school and middle-school classrooms.

Similar developmental trends also emerged in our more recent replication of this study (Henderlong & Lepper, 1997, 2000). Once again in this new sample, there was a significant although less dramatic decrease in intrinsic motivation from third through eighth grade. This decline in intrinsic motivation also was reflected in the component measures for both curiosity/interest and independent mastery, though not in the component measure of preference for challenge. Moreover, in this sample, even more dramatically than in the results of Lepper et al. (1997), extrinsic motivation showed a significant overall developmental decline over grades three through eight. Indeed, this decline was reflected in each of the three component measures of preference for easy work, desire for teacher approval, and dependence on the teacher.

Taken together, these findings suggest a clear developmental decrease in children's intrinsic motivation and something of a developmental decrease in children's extrinsic motivation as well, as displayed in Figure 10.4. Moreover, Henderlong and Lepper's study (1997, 2000) also provided one further line of evidence indicative of the conceptual independence of intrinsic and extrinsic motivation. When children's scores on the two separate scales of intrinsic and

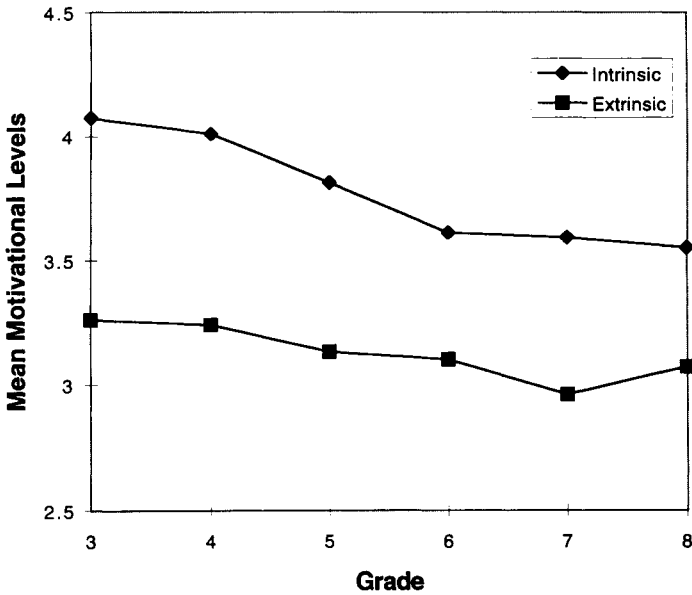


FIGURE 10.4

Overall intrinsic and overall extrinsic motivation, by grade, from Lepper et al. (1997) and Henderlong and Lepper (1997).

extrinsic motivation were correlated with their actual classroom grade averages, the two scales showed opposite relationships to this standard measure of actual classroom performance. Although both effects were relatively small, they were both significant: Higher levels of reported overall intrinsic motivation were associated with better grades in school ( $r = .17$ ;  $p < .01$ ), whereas higher levels of reported overall extrinsic motivation were actually associated, by contrast, with lower classroom grades ( $r = -.16$ ;  $p < .01$ ).

Sadly, these findings are not the only ones to suggest significant motivational problems in our schools that appear to increase, rather than decrease, as children progress through the grade-school and middle-school years (e.g., Anderman & Maehr, 1994; Eccles & Midgley, 1990). For example, Epstein and McPartland (1976) examined the reported quality of school life for children from grades 4 through 12. They defined quality of life in terms of the three dimensions of general satisfaction, commitment to classwork, and reactions to teachers. Both cross-sectional and longitudinal data indicated that as the years progressed, the reported quality of children's lives in school decreased, especially on the dimension of commitment to classwork. They suggested that this effect was partly driven by schools' inability to meet the needs of their students as the variance in their abilities increased with age. In another study, Sansone and Morgan

(1992) used a cross-sectional approach to document the academic and nonacademic activities that kindergarten and first graders, fifth and sixth graders, and undergraduates found intrinsically interesting. With increasing age, they found a progressive decline in intrinsic motivation, both in terms of enjoyment and willingness to repeat an activity for school-based—but not for non-school-based—activities.<sup>6</sup>

Likewise, other research has documented negative developmental changes in constructs theoretically linked to intrinsic motivation. For example, Nicholls (1978) found that 5 through 13 year-old children became increasingly pessimistic about their own abilities in reading as they progressed through school. Covington and colleagues showed that children decreasingly value effort as they grow older, because they come to view the exertion of effort as a sign of low ability (e.g., Covington, 1984; Harari & Covington, 1981). Intrinsic motivation can hardly be facilitated by situations in which children constantly feel a need to try to disguise their expenditure of effort. Finally, there is also evidence of a developmental increase in learned helplessness (Rholes, Blackwell, Jordan, & Walters, 1980) and of an increased focus on self-evaluation, rather than on task mastery, in various achievement settings (Anderman & Midgley, 1997; Maehr & Anderman, 1993; Midgley, Anderman, & Hicks, 1995).<sup>7</sup>

<sup>6</sup> It is important to point out that with all of these negative changes in academic motivation, it appears that children do remain intrinsically motivated in other domains of their lives, such as their relationships with peers or their involvement in sports (e.g., Sansone & Morgan, 1992). Indeed, although there seem to be few relevant findings at present, it might be hypothesized that students who come to be particularly demotivated in school will also come to disidentify with academic success and may, as a consequence, be motivated to seek out other sources of self-esteem and affirmation (e.g., Steele, 1988, 1992).

<sup>7</sup> Despite the array of evidence illustrating developmental decreases in intrinsic motivation, it is also important to note that not every study finds such a motivational decline. Specifically, Gottfried examined children's academic intrinsic motivation, both in general and for the specific content areas of reading, mathematics, social studies, and science, using her Children's Academic Intrinsic Motivation Inventory (e.g., Gottfried, 1985). In one study of fourth- through seventh-grade students, she found a developmental *decrease* in intrinsic motivation for reading but a developmental *increase* in intrinsic motivation for social studies (Gottfried, 1985). There were no significant developmental changes either for overall intrinsic motivation or for the specific content areas of mathematics and science. The differences between these findings and those of the research programs described in this chapter may be due in part to a more restricted age range, and, unfortunately, mean levels of intrinsic motivation in each of the areas by grade are not reported, so the data cannot be examined for possible trends. An alternative explanation might be that, in contrast to reading, there is a focus on new subjects each year in the content areas of mathematics, social studies, and science. For example, the tasks associated with reading are likely very similar in third, sixth, and ninth grades, but the tasks associated with mathematics may vary greatly from multiplication in third grade to pre-algebra in sixth grade to geometry in ninth grade.

## Understanding Developmental Declines in Motivation

In some sense, these developmental data merely reinforce an age-old impression of schools as citadels of boredom and alienation. Certainly, many Western thinkers who have written or spoken about schools—from William Blake (1794), Charles Dickens (1838–1839), and Mark Twain (1876) to George Orwell (1933) and Albert Einstein (1949)—have portrayed them as places of drudgery, ennui, and misery for many children. More recent and more professional critics of U.S. schools have also been frequently impressed with the lack of motivation that students seem so often to display in American classrooms (e.g., Bruner, 1962, 1966; Csikszentmihalyi, 1975; Dreeben, 1968; Holt, 1964; Jackson, 1968; Silberman, 1970).

Plainly, the availability of persuasive empirical evidence consistent with these claims should give us significant pause. If children, on average, are becoming less and less motivated each year they remain in our schools, it suggests that U.S. schools may be doing something wrong. Coupled with the array of recent findings attesting to the relatively poor performance of American students in various cross-national comparisons of academic accomplishment (e.g., Stevenson, Chen, & Lee, 1993; Stevenson, Lee, & Stigler, 1986; Stevenson & Stigler, 1992), these results point to a potentially significant problem—an education system in which many students are not learning or performing up to their potential. Consequently, it is of considerable practical significance, as well as some theoretical interest, to understand why these developmental decreases in motivation are occurring in American schools.

Before turning to potential substantive explanations for the reported developmental declines in intrinsic motivation, however, it is important to rule out the possibility that these differences are simple artifacts of the use of self-report measures and reflect merely developmental changes in children's perceptions of relevant social norms, their willingness to admit to an interest in their schoolwork, or the standards by which they judge their motivation (Lepper et al., 1997). Thus, it is worth noting several sources of evidence that suggest the basic validity of these measures. First, there is evidence that children's self-reports on these sorts of measures are highly correlated with reports made about those children by their teachers (Gottfried, 1985; Harter, 1981; Lepper et al., 1997) and their parents (Dollinger & Seiters, 1988). Second, there is also evidence that children's reports on these sorts of measures are correlated with other more objective indices of school performance, such as achievement-test scores (Boggiano et al., 1992; Gottfried, 1985), classroom grades (Gottfried, 1985; Henderlong & Lepper, 1997, 2000), and retention in grade (Dollinger & Seiters, 1988). Finally, these sorts of measures have also been shown to predict behavioral indicators of at least some aspects of intrinsic motivation, such as a preference for challenging academic tasks (Boggiano et al., 1992; Harter, 1980, 1981).

## Undermining Effects of Extrinsic Incentives and Constraints

One set of possible explanations for the decline in children's intrinsic motivation is, of course, implicit in the literature on the potential undermining effects of salient extrinsic incentives, external constraints, and other forms of social control just reviewed. As thoughtful classroom observers (e.g., Deci, Schwartz, Scheinman, & Ryan, 1981; Dweck, Davidson, Nelson, & Enna, 1978; Jackson, 1968; Kohn, 1993; Silberman, 1970) have long noted, a great deal of what goes on in typical American classrooms revolves around issues of overt social control. Indeed, Winnett and Winkler's systematic analysis (1972) of the goals of token economies and related contingency programs in schools clearly revealed a chilling preponderance of teachers' attention and effort devoted to the goals of making pupils be "quiet," "still," and "docile." Perhaps being subject to these powerful extrinsic forces in the classroom year after year may contribute to the observed decreases in intrinsic motivation. Moreover, some authors have argued, this emphasis on social control may well increase as children progress through school (Condry, 1978; Kohn, 1988; 1993).

In fact, Eccles and her colleagues (e.g., Eccles & Midgley, 1989; Eccles et al., 1993) took this basic argument one step further. These authors discussed the decline in intrinsic motivation in terms of a progressively greater mismatch between children's developing needs for autonomy and the demands of the classroom environment. On the basis of this "stage-environment fit" model, Eccles and her colleagues (1993) documented a number of developmentally inappropriate changes that occur, especially during early adolescence, as children make the transition to middle school. That is, just as students begin to thirst for increased autonomy and personal growth, schools seem to increase their focus on discipline, provide fewer opportunities for decision making, and assign less cognitively challenging coursework.<sup>8</sup>

### Decontextualization of Learning

A second general class of factors that may also contribute to the reported developmental declines in intrinsic motivation may involve what Bruner (1962, 1966) first referred to as the "decontextualization" of learning—that is, the attempt to teach skills and impart information in a highly abstract

<sup>8</sup> Eccles et al. (1993) have also suggested that parents may play a role in the developmental decrease in intrinsic motivation. As with teachers, parents often begin to tighten controls over their adolescents' behaviors just as adolescents are desiring increased autonomy. Indeed, they have found that excessive parental control is positively correlated with a decrease in intrinsic motivation. Eccles et al. concluded that parents need to find the right balance between excessive control and excessive leniency to match their adolescents' developing needs.

form, independent of any particular context of learning. Such instructional methods were presumably first developed in the hope of producing more generalizable, less situation-specific learning, although it is not clear from extant data that they regularly succeed in achieving even this goal (e.g., Ginsberg, 1977; Lave, 1988; Perkins, 1992). What does seem clear, however, is that deliberately divorcing the learning of academic skills from the real-world contexts in which their intrinsic utility might be obvious to students can have significant motivational costs (Condry & Chambers, 1978; Cordova & Lepper, 1996). If there is no "natural" value for students in learning about some particular topic that has been assigned to them, no "natural" curiosity about the topic, then learning can easily become little more than an exercise in memorization, aimed solely at improving performance on abstract classroom tests on the material.

Moreover, such pedagogical practices appear to be increasingly common as children progress through school. In the early grades, it appears, teachers are more likely to see their task as involving, in part, making the material more intrinsically interesting for students and showing them the way that what is learned in school may be relevant in their own lives. In later grades, however, teachers seem to presume that students *ought* to be already motivated to achieve, independent of their intrinsic interest in an activity or topic. Hence, any lack of motivation in the classroom comes to be seen as the student's, rather than the teacher's, problem. Indeed, teachers working with older students will often dismiss attempts to make tasks more interesting or more relevant for students as counterproductive "sugar-coating."

### Shifts in Students' Goal Orientations

A third set of reasons for the developmental decrease in intrinsic motivation may be a potentially maladaptive shift in children's classroom goals. In general, it has been argued that children often tend to adopt one of two competing goals in achievement situations: namely, (1) what have been termed *learning*, *mastery*, or *task* goals, where the focus is on increasing knowledge and task mastery, or (2) what have been termed *performance* or *ego* goals, where the focus is instead on gaining positive judgments of competence and avoiding negative judgments of competence (e.g., Ames, 1992; Dweck, 1986; Elliott & Dweck, 1988; Nicholls, 1984). Learning goals have been associated with a wide variety of positive achievement outcomes, such as cognitive engagement (Meece, Blumenfeld, & Hoyle, 1988), challenge-seeking (Ames & Archer, 1988; Elliott & Dweck, 1988), and persistence in the face of failure (Dweck & Leggett, 1988; Elliott & Dweck, 1988), as well as positive attitudes toward learning, stronger beliefs that effort leads to success, and more effective use of strategies (Ames, 1992; Ames & Archer, 1988). Performance goals, on the other hand, have often been associated with negative achievement outcomes, such as a focus on

ability rather than effort (Ames & Archer, 1988), decreased cognitive engagement (Meece et al., 1988), challenge avoidance, and learned helplessness when coupled with low perceived competence (Dweck, 1986; Dweck & Leggett, 1988; Elliott & Dweck, 1988). Thus, it has been argued, learning goals will typically have positive consequences whereas performance goals will often have negative consequences—especially for children who have low perceptions of their own competence.

However, much like the traditional assumption of a perfect negative correlation between intrinsic and extrinsic motivation discussed earlier, research on classroom goals may have created something of a false dichotomy. Thus, like Harter's measure of intrinsic versus extrinsic motivational orientations, Dweck's standard measure (Dweck, 1999; Dweck & Henderson, 1988) of goal choice requires the child to select one option or the other but not both. Yet there are obviously many classroom contexts in which students may hold both learning goals and performance goals simultaneously, truly hoping to master the material but also striving to outperform their classmates and demonstrate their competence relative to others. Holding these two goals simultaneously, we suggest, is likely a familiar experience for many high-achieving students, as well as for most readers of this chapter. Indeed, recent empirical work has shown that when measured separately, learning goals and performance goals can even be positively correlated (e.g., Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Meece et al., 1988).

Once we treat learning and performance goals as potentially independent constructs, however, it is necessary to examine their effects on achievement and motivation more carefully. Ample evidence suggests that learning goals do indeed have positive consequences for achievement and motivation (Ames, 1992; Dweck, 1986; Elliott & Dweck, 1988; Meece et al., 1988; Molden & Dweck, chapter 6 and Limenbrink & Pintrich, chapter 8, this book). It is the "negative" consequences of performance goals that have been called into question. Most notably, a program of research by Harackiewicz and her colleagues (Harackiewicz et al., 1997; Harackiewicz, Barron, & Elliot, 1998; Harackiewicz & Sansone, chapter 4, this book) has shown that the effects of performance goals tend to be varied and complex—sometimes negative and sometimes positive—at least in college classrooms. Although it is not yet as clear that the positive consequences of performance goals would be as apparent or widespread in the elementary school classroom, our argument is not that performance goals are necessarily harmful but rather that learning goals are adaptive and should therefore be encouraged.

Given that learning goals have such clear and positive consequences, it is unfortunate that children appear to value them less and less as they progress through school. Midgley et al. (1995) found that compared with elementary school students and teachers, middle-school students and teachers perceived a greater emphasis on performance goals relative to learning goals. Further, these same authors also found that middle-school

teachers actually used instructional practices that reflected a performance-goal orientation more than did elementary school teachers. Similarly, in terms of teacher behavior, the increasing emphasis placed on zero-sum competitive activities as children progress through our school system may also serve to focus classrooms less on learning goals and more on performance goals (Aronson, Blaney, Stephan, Sikes, & Snapp, 1978; Kohn, 1988; Nicholls, 1989).

Likewise from the students' perspective, Anderman and Midgley (1997) found, in a longitudinal investigation, that fifth-grade pupils became less learning-goal oriented and perceived the school culture to be more performance-goal oriented as they progressed into middle school. Other related research has shown developmental increases in anxiety about performance (Eccles & Midgley, 1989) and in learned helplessness (Rholes et al., 1980), both of which are thought to be negatively correlated with learning goals. Thus, several lines of research suggest that learning goals tend to decrease across the school years.

Though it is clear that learning goals are generally adaptive and that they may decrease developmentally, are they necessarily related to intrinsic motivation? The literature suggests that although the mapping may not be precise, the answer is yes (e.g., Dweck, 1986; Harackiewicz et al., 1997, 1998; Henderlong & Lepper, 1997; Heyman & Dweck, 1992; Sansone & Harackiewicz, 1996; chapter 8, this book). Such a suggestion is consistent both with general speculations about the possible links between these two research areas and with several specific empirical findings. For example, Harackiewicz and her colleagues (1997) found that college students who adopted mastery goals tended to be more interested in the course than those who did not adopt these goals, and Elliot and Harackiewicz (1994) showed that specific mastery goals enhanced intrinsic motivation in a context with neutral higher-order goals.

### **Changing Levels of Challenge**

Finally, although this is the area in which there is the least direct evidence, a number of authors have suggested that the level of challenge offered by schoolwork may also change as children progress through the grades. On the one hand as the curriculum becomes more highly regimented and regulated in the later grades, some authors have argued simply that it may become increasingly difficult for teachers to provide the sort of individualization of instruction to students that would ensure that each student is being given tasks that are at an appropriate level of challenge—that is, classroom tasks that are neither trivially easy nor impossibly hard for each student, given his or her current level of ability and performance (Csikszentmihalyi, 1975; Dreeben, 1968). Other authors have argued more directly that the average level of cognitive challenge provided for students by their

assigned coursework steadily decreases as children go through elementary and middle school (Deci, 1975; Eccles et al., 1993). Finally, still other authors have suggested that classrooms place greater emphasis on zero-sum competition at higher grade levels. If so, the very nature of such competitions—that success by some students must imply failure for others—may ensure that the proportion of students in a class who will find the material optimally challenging will necessarily decrease with increases in grade level (Aronson et al., 1978; Kohn, 1988).

### **Summary**

In reality, of course, the sources of the developmental decrease in intrinsic motivation are almost certainly overdetermined. Nevertheless, it does seem clear that simply increasing the number of salient extrinsic rewards is not likely to reverse this developmental trend. If anything, the data suggest that at least in American schools, extrinsic motivation may also decline as children progress through the grades. In the next section, therefore, we examine some less controlling, and potentially more effective, strategies for addressing the motivational problems indicated by the developmental data.

## **INTRINSIC PLUS EXTRINSIC MOTIVATION**

How, then, might we best design learning environments, to make judicious and effective use of both intrinsic motivation and extrinsic motivation? Can a social-psychological approach help us promote and sustain children's motivation to learn as they progress through school?

### **Promoting Intrinsic Motivation**

We first consider this problem in terms of strategies for promoting intrinsic motivation—as it might be approached from the perspective of the four classes of factors outlined above as potential causes of the current developmental decline in intrinsic motivation.

### **Promoting Perceptions of Autonomy and Personal Control**

One obvious approach, derived directly from the literature on the potential undermining effects of superfluous extrinsic incentives and constraints, would focus on increasing children's sense of personal autonomy and self-determination in the classroom (deCharms, 1968, 1984; Deci, 1981; Deci & Ryan, 1985; Nuttin, 1973), particularly as children approach adolescence and their need for autonomy increases (Eccles et al., 1993). Thus, in deCharms's terms, children should be treated in the classroom as "origins"

of their behaviors, rather than "pawns" simply carrying out the instructions and desires of others.

Indeed, Ryan and Grolnick (1986) found that the more children perceived their classrooms to be "origin focused," the greater their sense of self-worth, cognitive competence, internal control, and intrinsic motivation. Interestingly, it was not primarily the objective classroom climate that guided children's perceptions, but rather their differing construals of this climate. Even the same classroom environment was experienced differently by different children, suggesting that both the individual and the environment interact to determine children's perceptions of autonomy.

There are a number of strategies one might employ to increase feelings of autonomy. Thus, teachers who are autonomy oriented have been shown to have more intrinsically motivated students with higher levels of self-esteem, compared with students of teachers who are control oriented (Deci et al., 1981). This suggests that training teachers to become more autonomy oriented may have benefits for their students. Indeed, in one 4-year longitudinal study, teachers who were trained in "origin promotion" had students who showed greater academic achievement, more adaptive risk taking, and fewer absences and tardies compared to students in control classrooms (deCharms, 1984). The effectiveness of "origin promotion" training may be limited, however, by teachers' own feelings of control concerning the intervention. That is, teachers must feel ownership over an origin-promoting curriculum and must believe that they can help all students to become origins by providing an optimal amount of structure, in order for such a curriculum to be effective.

Another strategy for promoting a sense of self-determination is, of course, to avoid superfluous external controls. In many classrooms, rewards are used excessively, in situations where they are not needed to produce task engagement. Consider, for example, programs that offer highly salient extrinsic incentives (e.g., fast food, candy, or cash) for reading books (e.g., Kohn, 1995). In such programs, rewards are often given simply on the basis of the number of books read, without taking account of differences in ability levels, effort, or the difficulty of the various books. For the many children who actually enjoy reading books *before* such systems are implemented, reading for the sake of earning rewards may send a very confusing message. Are they reading books because they enjoy them, or because they want to earn the rewards? More important, what happens when the reward program ends? Rather than relying on such nondescriptive rewards, teachers might give children more informational feedback about their strengths and weaknesses. As noted earlier, rewards tend to enhance motivation when they provide positive information regarding competence but undermine it when they serve only to control behavior (Deci, 1975; Deci & Ryan, 1980; 1985; Lepper, 1981).

Public systems of recognition, such as honor rolls, gold stars, and bulletin boards displaying the "best papers," may also be harmful to the moti-

vation of many children. For every student given the opportunity to bask in glory, there are often 10 to 20 whose feelings of competence may be lessened. Moreover, even for the most successful students, such forms of recognition may encourage children to think about the task as a means to an end rather than an end in itself (Kruglanski, 1978; Malone & Lepper, 1987)—a situation that can lead even young children to devalue the activity per se (Lepper et al., 1982). Such controlling tactics may produce compliance in the short run, but the message they send is that academic tasks are done to please the teacher and to earn public recognition rather than because of interest in or enjoyment of the material.

In addition, it may also be possible to help “inoculate” children against the potential detrimental effects of superfluous tangible rewards. Hennessey, Amabile, and Martinage (1989), for instance, designed an “immunization” procedure to help children to focus on their intrinsic motivation and to distance themselves psychologically from superfluous extrinsic incentives. Students exposed to this procedure proved both more creative when they were rewarded than when they were not and more creative than students who had not received this training. Similarly, Cordova, Christensen, and Lepper (2000) showed that comparable immunization techniques could eliminate the negative effects of salient extrinsic incentives on children’s problem solving and learning of new concepts.

Yet another general method for enhancing children’s feelings of self-determination is to provide them with choices. Thus, many experiments have illustrated the potential motivational and educational benefits of the provision of choice (Cordova & Lepper, 1996; Iyengar & Lepper, 1999; Langer, 1989; Nuttin, 1973; Perlmutter & Monty, 1977; Zuckerman, Porac, Lathin, Smith, & Deci, 1978). Of course, in typical classroom settings, the provision of unfettered student choice runs the significant risk that at least some students may select only the least effortful options or may otherwise make pedagogically dysfunctional decisions (Malone & Lepper, 1987; Steinberg, 1989). Hence, it is important to note that even seemingly trivial (e.g., Cordova & Lepper, 1996; Iyengar & Lepper, 1999) or purely illusory (e.g., Langer, 1975, 1989) choices can still have significant benefits.<sup>9</sup>

<sup>9</sup> Interestingly, although Iyengar and Lepper’s (1999) studies do illustrate the motivational and instructional benefits of choice in general, they also point to a potentially critical cultural difference in the importance of personal choice, with choice proving more important for students from highly individualistic than from highly collectivistic societies. In particular, both Asian American and Anglo American children performed and learned better when they made small instructionally irrelevant choices for themselves than when those choices were made for them by strangers—although this effect appeared somewhat stronger among the Anglo American children. By contrast, Asian American students performed best of all when these same small choices were made for them by people with whom they had ongoing personal relationships (i.e., parents and classmates), whereas Anglo American students performed just as poorly when the choices were made for them by significant in-group members as by total strangers.

Cordova and Lepper (1996) and Iyengar and Lepper (1999), for instance, both showed that permitting grade-school children to make even a small set of seemingly trivial and instructionally irrelevant choices in using an educational computer program substantially increased their learning from that program and their subsequent intrinsic interest in the material taught. Similarly, in a series of studies of the motivational strategies of especially effective human tutors, Lepper, Woolverton, Mumme, and Gurtner (1993) showed that expert tutors will frequently offer small choices, or will create the illusion of offering such choices, to their pupils. Finally, deCharms (1984) noted that teachers can provide carefully designed choices to students, in which the alternatives are fixed so that any option is acceptable, and Eccles et al. (1993) have suggested that children should be allowed to participate in classroom rule making to enhance feelings of autonomy.<sup>10</sup>

In summary, one way to enhance children's intrinsic motivation is for teachers and administrators to promote autonomy and self-determination. This can involve encouraging an origin orientation, using extrinsic rewards more sparingly and informatively, and providing choices when possible. However, if teachers and administrators are wedded to the idea of widespread reward systems, one inventive approach is to use learning activities themselves as the rewards. In one illustrative study, children who were rewarded for completing routine mathematics problems with the opportunity to engage in special mathematics activities showed enhanced subsequent motivation, in terms of the number of problems completed and time spent working (Taffel & O'Leary, 1976). Thus if means–end contingencies are to be employed, making the end an academic task may help both motivation and learning.

### **Increasing Contextualization and Curiosity**

A second general approach for combating the current developmental decline in motivation in U.S. classrooms would involve attempts to promote children's sense of curiosity by placing learning in meaningful and exciting contexts that would illustrate its inherent utility and would capitalize on

<sup>10</sup> Just as teachers must give students choices and treat them as origins, so, too, must administrators promote teacher autonomy and personal control over their classroom practices (deCharms, 1984; Eccles et al., 1993). As noted, origin-promotion teacher training is not effective if teachers do not themselves feel like origins with respect to the intervention curriculum. More generally, if teachers are subjected to stringent controls and minimal opportunities to make decisions about their own classrooms, it will likely be very difficult for them to promote feelings of autonomy in their students. As Deci, Spiegel, Ryan, Koestner, and Kauffman (1982) and Garbarino (1975) showed experimentally, when teachers or tutors are held responsible for their students' performing above a given standard, they become more control oriented toward their students, whereas when this performance pressure is removed, these teachers promote more student autonomy by giving more choices, issuing fewer commands, and being less critical of their students.

students' prior interests (see also Jacobs & Eccles, chapter 14, this book). Strategies of this sort might include the contextualization and personalization of instruction and a focus on topics and projects that make contact with children's existing interests.

Studies by Parker and Lepper (1992) and Cordova and Lepper (1996), for example, compared the responses of grade-school students working on educational computer programs that presented elementary mathematics problems either in a purely abstract numerical form or in a meaningful and interesting fantasy context in which correct problem solutions were facilitative of larger role-playing goals. In both studies, students who worked with contextualized programs showed greater learning, better transfer, and more subsequent interest in the topic than did their peers who worked with more abstract versions of these programs.<sup>11</sup>

In similar fashion, Cordova and Lepper (1996) also examined the effects of "personalizing" educational computer programs on students' learning and subsequent motivation. In the relevant conditions of their study, students were presented with problems and instruction embedded either in generic fantasy contexts or in personalized fantasy contexts in which various specific bits of information about the child's own friends, hobbies, preferences, and the like were included to heighten the relevance and interest of the context for each individual student. As in previous investigations along these same lines (e.g., Anand & Ross, 1987; Ross, 1983), students presented with more personalized material learned more effectively and showed greater subsequent interest in the material than did those exposed to the more generic presentation.

There is also evidence that learning is most effective when it is linked to topics about which students have high levels of interest outside the classroom. Asher and his colleagues (e.g., Asher, 1981; Asher, Hymel, & Wigfield, 1978), for instance, showed that students' recall of material from educational essays was highly correlated with prior measures of their interest in the topics of these essays. In comparable fashion, Anderson, Shirey, Wilson, and Fielding (1987) demonstrated that grade-school children's memory for sentences they had read earlier was better predicted by independent ratings of the interest value of the sentences than by standard student reading comprehension scores or text "readability" indices. More generally, the potential value (and possible pitfalls) of capitalizing on children's existing interests have been examined by Renninger, Hidi, and Krapp (1992; see also chapters 11 and 13, this book).

<sup>11</sup> In both these cases, it is important to note that the fantasies were integrated with, or endogenous to, the material to be learned. Malone and Lepper (1987) have suggested that the use of more arbitrary, exogenous fantasy contexts, like more tangible extrinsic rewards, might undermine learning and subsequent intrinsic motivation.

Finally, at the classroom level, the sorts of motivational and instructional advantages outlined in this section are often a central ingredient in what have been called "project-based" or "integrated" curricula. As discussed in more detail elsewhere (e.g., Bruner, 1962, 1996; Edwards, Gandini, & Foreman, 1993; Katz & Chard, 1989), these approaches involve the embedding of instruction in specific meaningful and interesting contexts. Such programs may be expected both to increase student motivation and to illustrate the utility of the material being presented outside of the classroom.

### **Emphasizing Learning Goals**

A third potential response to the developmental decrease in intrinsic motivation is to encourage children to adopt learning goals in the classroom. How might this be accomplished? Findings from laboratory studies and classroom observations indicate that although some aspects of goal orientation may be relatively stable within individuals (e.g., Dweck, 1990; Dweck & Leggett, 1988), teachers and parents also play a critical role. Because children within the very same classroom may possess vastly different constellations of goals and achievement-related beliefs (e.g., Dweck, 1986; 1990; Dweck & Leggett, 1988; Elliott & Dweck, 1988), however, it is important that interventions be targeted not only at the classroom as a whole but also at particular children who may harbor strong and exclusive performance goals.

In considering how children's individual goal orientations might be altered, it is useful to examine how performance and learning goals have been experimentally induced in past research. For example, Elliott and Dweck (1988) experimentally induced either a performance-goal orientation or a learning-goal orientation by emphasizing different aspects of the situation. In the performance-goal condition, children were told that their performance would be filmed and evaluated by experts. In the learning-goal condition, children were told that what they learned might be helpful in school, that mistakes were a necessary part of the learning process, and that the task would "sharpen the mind." Compared to children in the learning-goal condition, children in the performance-goal condition showed strategy deterioration, maladaptive attributions for failure, and negative affect, illustrating the importance of the framing of educational tasks for children. Perhaps if learning goals are to be fostered, educators should explicitly emphasize the natural process of learning through one's mistakes rather than the process of testing and performance evaluation (e.g., Lampert, 1986; Papert, 1980, 1993).

Similarly, learning goals may also be induced by encouraging children to view intelligence as a malleable quality rather than a fixed entity. Research by Dweck and her colleagues (e.g., Dweck, 1986, 1999; Dweck & Bempechat, 1983; Dweck & Leggett, 1988) has demonstrated that children who believe intelligence is malleable (incremental theorists) tend to adopt learning

goals in the classroom whereas children who believe intelligence is immutable (entity theorists) tend to adopt performance goals in the classroom. Therefore, encouraging children to adopt incremental theories may encourage learning goals and intrinsic motivation. Attribution "retraining," in which attributions of failure to controllable factors like effort expenditure or strategy employed are modeled and reinforced, provides one example of such a procedure (e.g., Dweck, 1975; Foersterling, 1985). Again, however, children within the same classroom may vary widely in their beliefs about the malleability of intelligence, so that interventions may be most effective when adapted for individuals with different types of beliefs.

Finally, at the classroom level, Ames and her colleagues (Ames, 1992; Ames & Archer, 1988) demonstrated that different classroom contexts can create different goals for children. Thus, the negative and positive behaviors that are typically associated with performance goals and learning goals, respectively, can be predicted on the basis of student perceptions of whether their classroom teacher focuses more on performance or on learning. Ames (1992), for example, outlined in some detail the steps required for a successful classroom intervention to promote learning goals, which may need to include changing both teachers' perceptions about the advisability of a preoccupation with performance and their own personal theories about the malleability of intelligence (Dweck & Bempechat, 1983).

### **Promoting Challenging Learning Environments**

A final potential ameliorative for the developmental decrease in intrinsic motivation is to focus on creating appropriately challenging learning activities and environments. Given that there are clearly not resources available to provide individualized instruction and materials for each student, educators are typically forced to settle on common tasks and assignments that are likely to prove too easy for some and too difficult for other children in a given class. This can lead to motivational problems, such as boredom on the one hand and frustration on the other. There are, however, several possible strategies that might help educators to address these motivational needs of individual students.

One current approach is to take advantage of modern technology, such as computers in the classroom (e.g., Lajoie & Derry, 1993; Larkin & Chabay, 1992; Lepper, 1985; Lepper et al., 1993). If students are given the opportunity to work individually at the computer, it is possible in most domains to create tasks with graded levels of difficulty that will allow each student to begin at an appropriate level and to progress at an appropriate pace. On the one hand, for children who have fallen behind their classmates, computerized instruction can allow them to work at their own pace and gain small-scale mastery experiences rather than be consumed by worries about being behind the rest of the class. On the other hand, computerized instruction

would also allow more advanced children to push their limits rather than be "held back," bored by the seemingly slow pace of the standard curriculum. Further, not only do computerized tasks afford several levels of difficulty but they also allow for immediate feedback. In contrast to typical classwork—where feedback is given days or even weeks after the work has been completed—computers are capable of immediately explaining to children both their strengths and weaknesses. Such timely feedback about performance is surely beneficial in terms of both motivation and achievement, because immediate feedback can be given while students can still remember the details of the task, the particular problems they encountered, and/or the questions that had occurred to them. Indeed, the individualization of instruction in terms of the appropriate match of task difficulty and student ability has been one of the earliest and most sustained hopes of proponents of computer-based instruction (e.g., Lajoie & Derry, 1993; Larkin & Chabay, 1992; Suppes, 1966).

A second way to address students' individual motivational needs is through human tutors. Research suggests that individualized instruction through tutoring is consistently superior to whole-class instruction, even when classrooms adopt a mastery-oriented approach (Bloom, 1984). Because tutors are concerned with only one student—rather than with an entire class—they can, and do, continuously adjust the level of challenge to the current cognitive and motivational needs of that student (Lepper et al., 1993; Lepper, Drake, & O'Donnell-Johnson, 1997). Clearly, hiring personal tutors for each child is prohibitively costly, but there may be less "expensive" yet still mutually beneficial solutions. For example, cross-age peer-tutoring programs, in which older children learn to teach and sharpen their own skills by providing individualized tutoring for younger children, have been shown to increase the motivation and performance of both the tutors and the tutees in a wide variety of educational settings (e.g., Foster-Harrison, 1997; Goodlad & Hirst, 1990).

Finally, at the classroom level, a number of techniques for encouraging cooperative learning seem to maximize the likelihood of an appropriate level of challenge while minimizing perceptions of a zero-sum atmosphere. In general, research has shown that children working in cooperative groups demonstrate superior problem solving compared with children working either individually or in competitive groups (Johnson, Skon, & Johnson, 1980; Qin, Johnson, & Johnson, 1995; Slavin, 1996). Further, it is not only the low-ability and average students who show improvement; even high-ability students show enhanced performance in cooperative learning situations (Johnson et al., 1980).

Although they differ in the specifics of the programs they recommend, many educators have shown the motivational benefits of the introduction of specific cooperative learning programs into U.S. schools. Slavin's (1983, 1996) procedures for offering group rewards based on the average of inde-

pendent measures of the success of each group member and Aronson's "jigsaw classroom" (Aronson et al., 1978), for instance, represent two models of cooperative learning that seem to have produced substantial cognitive and motivational benefits. Likewise, studies of Palincsar and Brown's (1984) "reciprocal teaching" procedures and Dansereau's cooperative learning strategies (1988) have demonstrated the effectiveness of pedagogical techniques based on the use of small cooperative learning groups within classrooms. Similarly, though at a slightly higher level of analysis, Brown and Campione's (1994) attempts to transform traditionally individualistic U.S. classrooms into "communities of learners," and similar initiatives by others (Brown, Collins, & Duguid, 1989; Scardamalia & Bereiter, 1991), seek to promote cooperative learning across even larger groups in school.

### Summary

In short, if we accept the evidence that children show less and less intrinsic motivation as they progress through school, there are interventions available that might help to ameliorate this problem. By promoting a sense of control and self-determination in students, by situating learning activities in meaningful and interesting contexts, by emphasizing learning goals, and by seeking to provide an appropriate level of challenge and difficulty for individual students, we may begin to address this problem more effectively.

### Promoting Other Motivations

Although we believe that the promotion of intrinsic motivation is an important and highly desirable educational goal, it is not the only factor to deserve consideration. In closing this chapter, we examine two additional issues of substantial importance in understanding children's motivation in school.

#### Promoting Extrinsic Motivation?

A first additional consideration concerns the necessity and indeed the value, under appropriate conditions, of extrinsic motivation in U.S. schools. Although the utopian goal of a school system in which students are constantly motivated by a purely intrinsic desire to learn new topics and master new skills has been a persistent and appealing vision to some (e.g., Kleiman, 1984; Leonard, 1968; Neill, 1960; Rousseau, 1762; Schank, 1984), it seems to us to be both an unattainable and perhaps even an undesirable goal.

In the first place, not all activities we want children to undertake in school are naturally—or even can be made—intrinsically motivating. In many cases in the early stages of learning, the intrinsic value of a given

activity may not even be apparent until the individual has acquired some minimal level of competence. A child first learning to sound out single words, for instance, will not be able to experience many of the inherent pleasures of reading. At the other end of the continuum, real mastery of most significant domains of learning may require thousands of hours of repetition and practice (Ericsson, Krampe, & Tesch-Roemer, 1993)—substantially more than many students would choose to invest in even the most interesting of educational activities. In both cases, the judicious use of extrinsic incentives may be entirely appropriate, to encourage the level of task engagement needed to produce learning. Moreover, if the level of initial interest in the task is sufficiently low, the use of extrinsic rewards may even have positive effects on later motivation, as noted in our earlier review. Extrinsic rewards delivered in an informative manner may likewise help focus students' attention on their strengths and weaknesses, in ways that may help them improve their performance and identify more general skills and strategies that will continue to have value and to earn approbation throughout school and beyond.

More generally, as long as we retain the practice of "compulsory" education and the idea of a general curriculum of material that we expect all students to master, some use of extrinsic rewards may be inevitable. At the same time, there may also be techniques that could be used, as we have suggested, to minimize the possible detrimental effects of such rewards. A start would be to avoid the use of truly superfluous extrinsic rewards. Arbitrary tangible rewards used to produce initial task engagement, for instance, may later be gradually "faded out" as students achieve levels of competence that permit them to enjoy the inherent values of the task (e.g., Turkewitz, O'Leary, & Ironsmith, 1975). Similarly, making extrinsic rewards contingent on individual mastery of material rather than on comparative performance standards may permit all students to experience a sense of competence and progress in their schoolwork (Bandura & Schunk, 1981), and using higher-interest academic activities as "rewards" for low-interest activities may limit or eliminate potential negative effects (e.g., Taffel & O'Leary, 1976).

In short, success in school, as in many areas of life outside of school, may require us to attend simultaneously to both intrinsic and extrinsic sources of motivation (Heyman & Dweck, 1992; Jackson, 1968; Lepper, 1983; Nisan, 1992). If there is too exclusive a preoccupation with intrinsic motivation on the one hand, students are likely to shortchange or ignore areas of the curriculum that happen not to appeal to their personal interests and proclivities. If there is too exclusive a preoccupation with extrinsic motivation on the other hand, students are likely to suffer from a lack of motivation and a sense of helplessness outside of the specific situations in which extrinsic rewards are available. Our challenge as educators is, therefore, to make use of extrinsic rewards in a manner that supports rather than undermines students' intrinsic interest.

## Promoting Internalized Motivation?

A second and final additional consideration takes these issues one step further, by focusing on the process by which students come to internalize initially external and imposed goals into their own system of goals and values. Although internalization has long been a central concept in developmental theories (e.g., Aronfreed, 1968; Freud, 1930; Hoffman, 1970; Kelman, 1958; Lepper, 1983), it has proved remarkably difficult to study with precision in the laboratory or in the classroom. Clearly, we do often undertake tasks that require great effort or persist at tasks in the face of substantial difficulties—not just to meet others' expectations or for the sake of immediate tangible rewards but also to meet our own expectations for ourselves or to achieve our own long-term goals. Yet, understanding how these sorts of longer-term internalized motivations are derived from their more clearly external precursors has proved particularly resistant to direct empirical study.

In part because there are a number of mechanisms that may contribute to this process of internalization, various investigators have focused on somewhat different aspects of this phenomenon. On the one hand, Deci and his colleagues (Deci, Eghrari, Patrick, & Leone, 1994; Grolnick, Deci, & Ryan, 1997; Rigby, Deci, Patrick, & Ryan, 1992) have delineated a continuum of internalized responses ranging between purely extrinsic and purely intrinsic motivations. They have begun to examine the antecedents of the introjection of, and identification with, adult values by studying the regulatory and disciplinary practices of parents and teachers. Similarly, although in a somewhat more limited context, Lepper (1981, 1983) proposed a "minimal sufficiency" model to describe the conditions under which initial compliance with external requests and prohibitions may lead to later internalization of those standards in the absence of continued external pressures.

On the other hand, Harackiewicz and her associates (Harackiewicz & Elliot, 1998; Harackiewicz & Sansone, 1991) have stressed the complex interplay between people's immediate and longer-term goals, as well as the ways in which the larger social and cultural context may influence both the general expected value of an activity and the specific manner in which it is undertaken, experienced, and continued by an individual. In a related vein, Sansone and her collaborators (Sansone & Harackiewicz, 1996; Sansone, Weir, Harpster, & Morgan, 1992) have sought to situate these processes within the larger context of the multiple self-regulation strategies that people may use to cope and to persist when faced with initially unpleasant but required tasks.

Still others have focused more on the specific content and characteristics of activities, and on the match between these features and the particular abilities and proclivities of individuals, as determinants of the development of longer-term values and interests (e.g., Berlyne, 1960; Cordova & Lepper,

1996; Csikszentmihalyi, 1975; Malone & Lepper, 1987, Jacobs & Eccles, chapter 14, this book). These authors have stressed factors such as the extent to which a particular activity provides a continuing series of challenging goals at an appropriate level of difficulty for the person, the degree to which an activity supports a sustained sense of self-efficacy and personal control, and the variety of ways that an activity is associatively linked with other tasks and topics of intrinsic interest to the individual.

Despite these many different approaches to this problem, however, there seems to be substantial implicit agreement that such internalized motivations become prominent only rather late developmentally. Hence, in terms of our discussion of the decreases in motivation that characterize children's progression through schools in the United States, the explicit developmental findings of Chandler and Connell (1987) seem of particular interest. In this interview study, children between the ages of 5 and 15 years were asked to tell why they engaged in an array of different activities. On the one hand, across this entire age range, when the activities in question were those the children had said they liked, children gave primarily "intrinsic" reasons for task engagement. On the other hand, when children were queried about why they engaged in activities they said they did not like, clear developmental trends were apparent. As age increased, purely "extrinsic" reasons (e.g., "I study hard to please my parents") were progressively supplanted by more "internalized" reasons (e.g., "I study hard because I want to get into a good college"). This phenomenon, we trust, is not unfamiliar to most academicians. Coupled with our prior evidence of the developmental decline of other sources of motivation in the classroom, these findings illustrate the importance of including internalized motives in future investigations of academic motivation.

Moreover, once more abstract and long-term goals and more internalized principles and interests have come to the fore developmentally, we believe that two additional processes may gain increased importance. First, the person is likely to be faced with more situations in which there are multiple acceptable alternatives, all of which would suffice to produce some extrinsic reward (e.g., many ways of completing one's college requirements or making a living). In these cases, feelings of personal choice may easily outweigh feelings of external control—thus promoting, rather than undermining, subsequent intrinsic motivation. Second, once engagement with particular activities has become integrated into a person's basic self-definition (e.g., that one is a teacher, a researcher, a professor, and/or a psychologist), we believe that the offer of extrinsic rewards contingent upon those activities will be more likely to produce positive effects on later motivation than would comparable rewards contingent upon equally interesting activities that are not a part of the person's self-concept.

In any case, it seems certain that a better understanding of this "missing link" in the study of motivation should help the field to move beyond its tra-

ditional focus on purely “intrinsic” or “extrinsic” motivations. As Thomas Huxley (1897) argued long ago: “Perhaps the most valuable result of all education is the ability to make yourself do the thing you have to do, when it ought to be done, whether you like it or not...”

## CONCLUSIONS

The first experimental studies demonstrating that the misuse of superfluous extrinsic rewards and constraints to control behavior can undermine intrinsic motivation were done in the 1970s. Since then, as illustrated in this book, more than 100 additional experiments and dozens of research reviews have been added to this literature, which certainly seems to have generated more than its fair share of controversy.

Nonetheless, as we look back at the research and rhetoric on this topic, it seems to us time for the field to cast aside extreme views of this literature on both sides of this debate. The effects of rewards on subsequent motivation are neither all positive nor all negative; detrimental effects are neither “ubiquitous” nor “mythical.” Instead, the effects depend on the particulars of the situation—for example, the nature of the activity and its initial value to the individual; the timing, informativeness, controllingness, and salience of the reward; the precise contingency between the activity and the reward; and often the larger context in which the reward is provided. Perhaps it is time to devote our efforts more explicitly to clarifying the conditions under which both positive and negative outcomes are likely.

Equally important, it also seems to us time for the field to move beyond an exclusive focus on those settings in which intrinsic and extrinsic motivation may be in conflict with each other to a fuller consideration of the ways in which the two may, in many real-world contexts, operate independently or in tandem with one another. To do so, we will need to pay increased attention to the ways in which rewards are most commonly used in concrete real-world settings, like children’s classrooms, as well as to the multiple messages that rewards may convey in those settings.

In both cases, the larger message for researchers is the same: As Einstein is said to have remarked about the goal of theory in science more generally, we should aim to keep our analyses “as simple as possible—but no simpler.”

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