

## 2 **Intrinsic and extrinsic motivation: A developmental perspective**

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But to go to school on a summer morn  
O, it drives all joy away;  
Under a cruel eye outworn,  
The little ones spend the day  
In sighing and dismay.

—William Blake

From Blake's plaintive lament in 1794 to the continuing complaints of current critics of our educational system two centuries later, schools have been repeatedly faulted by would-be reformers for their failure to motivate and interest students. The best two days of the school year, the old saying goes, are the first and the last. The evident joys of being reunited with friends and classmates in school are outweighed only, according to detractors, by the drudgery imposed by teachers on their captive student audiences. When the topic is boredom, schools are often discussed in the same breath as other "total institutions" such as prisons or asylums.

Such a vision of schools is, of course, a caricature. Yet, like most caricatures, it was derived from an exaggeration of actual salient features of the target. It is hard for thoughtful observers to spend much time in schools without being impressed by the appearance of boredom given off by many students (e.g., Dreeben, 1968; Jackson, 1968; Silberman, 1970). The telltale signs of fidgeting, inattention, and restlessness are often widespread among pupils. Few activities in school seem to command students' complete attention and interest.

Behind these everyday observations, however, lies at least a minor paradox — certainly, before school age, learning seems clearly and universally intrinsically motivating for children. Few of us have ever seen, or even heard of, a three- or four-year-old with a "motivational deficit." Instead, young children seem eager and excited about learning of all sorts, and the more typical parental complaints concern their children's apparently insatiable curiosity and boundless energy. Yet, by the time these same children have entered school, a sizable fraction are quickly labeled as having motivational difficulties of one sort or another in learning.

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What happens? Are there actual developmental shifts in children's levels of intrinsic, or for that matter extrinsic, motivation? If so, what might account for those shifts? Are there things we, as a society, are doing wrong in the education of children? Are there things we might do differently, to help sustain or enhance children's interest in learning?

In the present chapter, we first review the existing literature and offer some new empirical evidence concerning developmental trends in intrinsic and extrinsic motivation. We then examine several possible explanations for these developmental findings and consider their implications for social and educational policy.

## **Intrinsic versus extrinsic motivation**

### *Early history*

In the early years of psychology, the field of motivation was rooted in the study of learning as conditioning. As late as 1960, the prototypic experimental paradigms for the study of motivational effects were Pavlov's classical conditioning model of the learning of involuntary associations and Watson's and Skinner's instrumental or operant conditioning model for the learning of contingencies between an organism's actions and outcomes. Both paradigms were derived from the study of lower animals or, later, of humans placed in deliberately simplified, artificial, and highly restricted learning environments that served to heighten the similarities between the process of *de novo* learning in people and in the rat or pigeon.

More important, in the present context, both paradigms involved the study of the learning of essentially capricious relationships between arbitrarily selected responses of the organism, arbitrary environmental stimuli, and arbitrary external rewards and punishments. A person might, thus, be asked to press a button/move a lever/state a preference, in the presence of a bell/light/tone/color, in order to obtain food/drink/money/social approval. Motivational theories of the time, in short, were focused deliberately and almost exclusively on *extrinsic* forms of motivation.

Around the beginning of the 1960s, however, a new perspective began to emerge. Theorists from a number of different fields began to react to the limitations of this dominant paradigm. Using the impoverished learning settings of the conditioning theorists as a foil, they began to examine forms of motivation that did not seem to fit the traditional extrinsic motivation model, but seemed instead to come from the organism itself, arising and persisting in the absence of external events that could be easily identified as the putative rewards or punishments motivating these actions.

Collectively, the phenomena of concern to these theorists came to be identified as *intrinsic* motivations (cf. Bruner, 1962, 1966; Hunt, 1961, 1965). They included several potentially distinct sources of motivation. Of these, the three most prominent were challenge, curiosity, and control.<sup>1</sup>

In perhaps the earliest influential contribution to this area, for example, Robert White (1959) made the case for a general motive he initially described as "effectance," and others later called mastery or competence motivation (e.g., Csikszentmihalyi, 1975; Harter, 1978). Drawing on a variety of observations of humans and animals actively exploring, studying, and manipulating their environments, even in the apparent absence of external rewards or punishments for doing so, White postulated that these organisms were intrinsically motivated to solve problems, to seek out and to master challenges posed by their surroundings. Activities that provided a challenge, some goal of uncertain but potential attainment – activities neither trivially easy nor impossibly difficult, but instead of some intermediate, optimal level of difficulty and uncertainty – would be sought out and kept at until they had been mastered and the organism could move on to some other challenge.

At this same time, a second class of intrinsic motivations, concerned with curiosity, uncertainty, incongruity, and discrepancy, became the focus of extensive theorizing by both Daniel Berlyne (1960, 1966) and J. McVicker Hunt (1961, 1965). Drawing once again on both animal and human findings (especially, in Hunt's case, the then new observations of Piaget on learning in young infants), these authors reviewed findings on the important attentional effects of a variety of informational parameters of environmental events, such as the novelty, complexity, variability, and incongruity of a stimulus. Here, the relevant metaphor was humans as information processors. People were hypothesized to derive motivation from activities and events that provide them with some optimal, hypothetically intermediate level of surprise, incongruity, or discrepancy from their current understanding and expectations.

Finally, during this same general period, other theorists such as Richard deCharms (1968) added a third, related form of intrinsic motivation, namely, a motive for control or self-determination (e.g., Condry, 1977; Deci, 1975, 1981; Nuttin, 1973). From this perspective, people were viewed as actors seeking to exercise and validate a sense of control over their external environments. As a result, they were theorized to prefer and to persist at activities that provide them with the opportunity to make choices, to control their own outcomes, and to determine their own fate. People will strive, in deCharms's early terminology, to see themselves as "origins" of their own purposeful actions rather than "pawns" of external environmental forces.<sup>2</sup>

Taken together, these various sources of intrinsic motivation were invoked to explain the large amount of effective learning and persistent activity that seems to take place in the absence of salient or powerful external contingencies. Because such factors could motivate learning both inside and outside of formal school settings, their cultivation quickly became a significant goal and ideal of many educational theorists (e.g., Bruner, 1962, 1966; Condry, 1977; Deci, 1975; Hunt, 1961, 1965; Lepper & Greene, 1978). Schools, it was suggested, should strive not only to train students' skills and to increase their knowledge; they should also strive to

cultivate and foster feelings of intrinsic motivation in students that should sustain in them a desire to learn that will persist long after they have left school.

*Undermining intrinsic motivation with extrinsic incentives*

The contrast between intrinsic and extrinsic motivation that underlay much of the early theorizing in this area would soon receive even greater impetus from a series of studies that showed that the misuse of extrinsic incentives could actually undermine intrinsic interest. Indeed, within a very short period, the appearance of several independent studies examining this basic hypothesis served to suggest the power and the generality of this effect.

In the first of these studies, for example, Deci (1971) showed that Carnegie-Mellon undergraduates who had been offered money for solving a series of three-dimensional puzzles that they would otherwise have found of intrinsic interest spent less subsequent time with those same puzzles – in settings in which money was no longer available – than did subjects who had worked the same puzzles without receipt of any extrinsic financial rewards. At almost the same time, Kruglanski, Friedman, and Zeevi (1971) reported significant decreases on a wide variety of measures of task performance (e.g., creativity, memory, incidental learning), as well as on explicit ratings of interest in the activities themselves, among Israeli high school students offered the extrinsic incentive of a tour of the university for their task engagement, compared with other students offered no such extrinsic reward.

Finally, Lepper, Greene, and Nisbett (1973) demonstrated parallel effects with a sample of preschool children specifically selected on the basis of their demonstrated initial intrinsic interest in a new art activity put out by teachers in the children's regular classrooms. In this study, children who explicitly agreed to engage in the art activity in order to obtain a tangible "Good Player Award" showed only half as much subsequent interest in this activity, several weeks later and back in their regular classrooms (once again in the absence of any expectation of extrinsic rewards), as did children who had engaged in the same art activity without any promise of an external reward but who subsequently received the same award unexpectedly or children who had engaged in the activity without either the promise or receipt of any award.

Together these initial studies demonstrated considerable generality to this potential negative effect of the use of functionally superfluous extrinsic rewards on students' intrinsic motivation. Across very different subject populations, a variety of specific activities, and several types of extrinsic rewards, these various investigations had nonetheless produced comparable results. At the same time, as these early researchers had explicitly acknowledged, neither their theories nor their findings suggested that the use of extrinsic rewards would always, or even typically, produce such detrimental effects on intrinsic motivation. Hence, subsequent research was

directed toward the specification of the precise conditions under which such negative effects, and those under which alternative positive effects, would appear.

This literature has been reviewed in some detail in a number of sources (e.g., Condry & Lepper, 1992; Deci & Ryan, 1985; Lepper, 1983a, 1988; Tang & Hall, 1995), roughly as follows. First, extrinsic rewards and punishments may have positive effects of several sorts. They may, for example, increase task engagement, which may in turn result in the acquisition of new skills or knowledge that could enhance the intrinsic value of the activity for the individual in the future. They may also provide the individual with important information signaling or emphasizing his or her competence at the activity, relative to some absolute or some social-comparative performance standard, again enhancing later intrinsic interest in it. Finally, of course, the receipt of extrinsic rewards or punishments may produce the expectation that the same activity will have comparable consequences in related future situations.

However, when these potential sources of beneficial effects are controlled or absent, as in each of the three original studies of this phenomenon, the offer of superfluous extrinsic incentives for engagement in activities of initial interest may produce a variety of negative effects on intrinsic motivation. The offer of superfluous but salient extrinsic incentives or constraints may, under these conditions, turn activities that were once seen primarily as "play" (i.e., things to be sought out and engaged in for their own sake) into tasks that are now viewed primarily as "work" (i.e., things to be engaged in only if one expects some continued external payoff).

Perhaps the most telling and informative illustration of this detrimental effect can be found in studies that examine what might be described as the minimal conditions under which extrinsic contingencies may influence intrinsic motivation. Lepper, Sagotsky, Dafoe, and Greene (1982), for example, studied the effects of the imposition of a purely nominal contingency on children's subsequent interest in activities presented either as "means" to some external end or as "ends" in themselves. In their study, two art activities of high – and equivalent – inherent initial interest were selected. In the experimental, means–end condition, students were asked to agree to engage in one of the two activities in order to "win" the chance to engage in the other. In a comparable control condition, students engaged in the same two activities for equivalent amounts of time, but without the imposition of any contingency between them. Two to three weeks later, students' subsequent intrinsic interest in both the activities was assessed in their regular classrooms, during "free play" periods in which no external constraints were present or anticipated. Compared with their counterparts in the control condition, children in the experimental condition showed decreased interest in whichever activity had been presented as a means, and increased interest in whichever activity had been presented as an end.

The effects illustrated in this literature, then, provide evidence of mechanisms –

both positive and negative – whereby the presentation of activities in the highly constrained and evaluative context of current schools might influence children's subsequent intrinsic motivation toward those activities. Perhaps, as some have argued (e.g., Condry & Chambers, 1978; Deci, 1975; Deci & Ryan, 1985; Holt, 1964), the ubiquity of grades, gold stars, report cards, and other aspects of formal evaluation in school may indeed undermine whatever intrinsic interest in the material taught that students may bring to the classroom. Perhaps, especially if used with care, those extrinsic incentives may, on the other hand, enhance feelings of competence or result in the acquisition of new skills that might enhance intrinsic interest. Without prejudging the outcome of these complex questions, this literature clearly highlights the potential significance of studies examining developmental trends in students' intrinsic motivation, particularly during the years when children are expected to be in school.

A final commentary on this literature is anecdotal, but especially relevant to these developmental concerns. Over the years, the senior author has had occasion to talk about these general findings to a number of groups of teachers and others involved in our educational system. In the process, a curious “finding” of its own emerged. When the results of this literature were described to audiences of educators who worked primarily with young children, the typical response was unadulterated approbation. These teachers clearly understood the phenomenon under discussion and thought that research documenting such effects was long overdue. By contrast, when these same findings were presented to educators who themselves worked more with older students, a second prototypic response began to appear. Although these teachers would often grant the importance of the phenomenon, they were quick to point out its lack of relevance to their own classroom situations. After all, they routinely indicated, students in their classes rarely displayed any intrinsic motivation whatsoever. There was simply nothing to be undermined. The older the students under discussion, in short, the less intrinsic motivation they were seen by their teachers to display in school.

### **Developmental findings**

Is there, indeed, a developmental decrease in intrinsic motivation, at least in school, of the sort suggested by these teachers and by several generations of school critics? Let us turn now to the empirical evidence on this question.

#### *Harter's scale and initial results*

The first important developmental findings in this area were published in 1981 by Susan Harter, in a paper that also presented for the first time her Scale of Intrinsic versus Extrinsic Orientation in the Classroom. Since this scale represents the pri-

mary instrument through which developmental trends in intrinsic–extrinsic motivation have been assessed, it is worth examining its characteristics in some detail.

The aim of Harter's scale was to assess children's general levels of intrinsic versus extrinsic motivation along three related dimensions that could be derived from the earlier literature on intrinsic motivation and applied to the classroom context. The first of these dimensions involved a "preference for challenge" and difficult alternatives versus a "preference for easy work assigned." The second involved the undertaking of tasks out of "curiosity/interest" versus "pleasing the teacher/getting good grades." The third examined the dimension of "independent mastery" versus "dependence on the teacher" for guidance and assistance. Intrinsically motivated students, it was presumed, would be more likely to seek out challenging and interesting activities and assignments and would prefer to plan and face difficulties on their own. Extrinsically motivated children, by contrast, should prefer easy and assigned work, at which they would be sure to succeed and for which they could be sure to get credit; and they should be more likely to seek out help from the teacher in deciding what to do next or how to respond when difficulties arise.<sup>3</sup>

For each of these dimensions, then, Harter created half a dozen items, each contrasting a characteristically intrinsic versus a characteristically extrinsic alternative. For example, one item from the curiosity scale reads as follows: "Some kids work really hard to get good grades" (extrinsic choice) versus "Other kids work really hard because they like to learn new things" (intrinsic choice). A comparable item from the challenge scale reads: "Some kids like to go on to new work that's at a more difficult level" (intrinsic choice) versus "Other kids would rather stick to the assignments which are pretty easy to do" (extrinsic choice). For each of the items on the questionnaire, then, a child must first choose between an intrinsic and an extrinsic response, by indicating which of the two types of children he or she is more like. Once this choice has been made, the child is asked to indicate the strength of his or her convictions by indicating whether the chosen alternative is either "somewhat like me" or "a lot like me," as shown in the top panel of Figure 2.1. The net result is an overall 72-point scale of an individual's self-reported general intrinsic versus extrinsic motivational orientation, comprising three subscales of challenge, curiosity, and independence.

Among the many findings reported using this scale by Harter (1981), the most interesting were clearly the developmental trends that emerged when Harter administered this scale to a sample of 793 California public school children, ranging from third through ninth grade. The results were clear and striking: On each of the three component measures, and consequently on a composite measure as well, the data showed systematic and significant decreases in intrinsic motivational orientation (and/or significant increases in extrinsic motivational orientation, since the two are perfectly negatively correlated) with increases in age or grade level.

Figure 2.2 displays these results, summarized in a single composite measure of intrinsic motivation, from Harter's initial article – findings that were taken by many

Sample Item from Harter's (1981) Scale of Intrinsic vs. Extrinsic Motivational Orientation:

Really True for Me	Sort of True for Me	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	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 ask questions in class because I want to learn new things.

Extrinsic Item:

I ask questions because I want the teacher to notice me.

Figure 2.1. Scale of intrinsic versus extrinsic motivational orientation, from Harter (1981).

as a striking confirmation of the worst fears and strongest claims of educational critics concerned about student motivation in our schools. From the early elementary school years, when children reported themselves to be highly intrinsically motivated, to the later elementary and middle school years, there was a steady



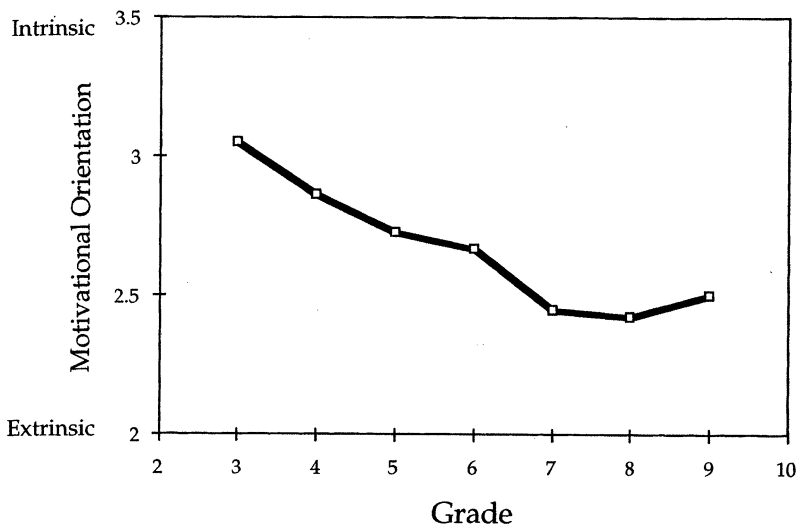


Figure 2.2. Overall intrinsic versus extrinsic motivation, by grade, from Harter (1981).

decrease in reported intrinsic motivation. The longer children remained in school, it seemed, the less intrinsically motivated they became.

#### *Subsequent findings with Harter's scale*

Such findings were greeted, quite appropriately, with great interest and concern, and several other investigators sought to replicate Harter's developmental results using her same scale. These follow-up studies, in general, provided further support for Harter's initial conclusions concerning a decline in intrinsic motivation during the elementary and middle school years, at least for middle-class populations.

Tzuriel (1989), for instance, used Harter's scale with a very large sample of 3,005 middle-class Israeli children, representing the same age/grade range as Harter's original sample. He found, like Harter, a large and significant decline in reported overall intrinsic motivational orientation from third through ninth grade, although specific separate scores for the three subscales are not reported. Similarly, Newman (1990) administered Harter's scale to 177 third-, fifth-, and seventh-grade students in Riverside, California. On both the preference for challenge and the independent mastery scales, he found significant decreases in intrinsic motivation with increasing age and grade. (Because the items making up Harter's curiosity/interest subscale did not show sufficient internal consistency in Newman's sample, data from this measure were not reported.)

For disadvantaged and academically problematic students, by contrast, there are

significantly fewer data available, and the developmental trends are less clear. Dolinger and Seiters (1988) gave Harter's scale to a sample of 50 second- through seventh-grade children who had been referred to a university clinic because of academic and/or behavioral difficulties in school. In this sample, there were no significant relationships between age/grade and any of Harter's three motivational scales. Tzuriel (1989), however, found a curvilinear relationship between reported overall intrinsic motivation and age/grade among a large sample of 1,287 students taken from schools identified by the Israeli Ministry of Education as serving students from relatively more disadvantaged backgrounds. For these students, there was a decline in reported intrinsic motivational orientation from third through sixth grade, but this decline was followed by an increase on this same overall measure from sixth through ninth grade. Although neither of these findings has, as yet, been replicated, Zigler's (e.g., 1966, 1971) extensive work on outerdirectedness among institutionalized and retarded children would suggest the importance of further investigations with these sorts of populations.

#### *Disentangling intrinsic and extrinsic motivation: New results*

There is, of course, one potentially crucial methodological problem with interpreting any of the studies using Harter's scale as strong evidence of a decrease with age in students' intrinsic motivation in school: Perhaps rather than a decrease in intrinsic motivational orientation, the typical results discussed here reflect instead an increase in extrinsic motivational orientation. As children grow older and progress through school, this alternative interpretation might suggest, they learn to take increasingly seriously the extrinsic indicators of success or failure in school.

Because Harter's scale presumes that intrinsic and extrinsic motivation are negatively correlated, indeed that they are mutually exclusive, a child who scores high on one index will necessarily score correspondingly low on the other. Respondents are forced to indicate, for example, that they ask questions in class either "because they want to learn new things" or "because they want the teacher to notice them." Nowhere is it possible for students to report both being curious about a subject, but also interested in recognition from their teacher. This presumption that there must be a perfect negative correlation between a student's levels of intrinsic and extrinsic motivation places a very strong constraint on our ability to interpret clearly the developmental findings using this instrument.

In fact, there is no reason why these two constructs, intrinsic and extrinsic motivation, might not be independently assessed, as Harter herself has indicated (Harter, 1981). In fact, there are good theoretical reasons, even within the overjustification literature, to suggest that both extrinsic rewards that carry significant information about one's competence (like grades in school may do in many circumstances), as well as more purely social rewards (like teacher, or parental, at-

tion), may not undermine intrinsic motivation (e.g., Condry, 1977; Deci & Ryan, 1985, 1991; Lepper, 1983a; Lepper & Hodell, 1989).

Indeed, it should be possible to examine separately students' levels of intrinsic and extrinsic motivation by using only a slight modification of Harter's own scale. If, instead of forcing children to choose to describe themselves as either intrinsically or extrinsically motivated, one were to ask children separately about each half of each of Harter's items, one could arrive at independent assessments of these two dimensions. Just as Sandra Bem's studies (1974, 1993) on sex roles and gender identity demonstrated the importance and utility of assessing masculinity and femininity as two separate dimensions, rather than the single bipolar dimension that had been characteristic of previous scales in this area, it seemed possible that disentangling measures of intrinsic and extrinsic motivation might pay theoretical dividends. At the very least, a developmental study that included independent measures of the two should help to clarify previous developmental findings obtained using bipolar scales.

Following this reasoning, the present authors undertook such a study. In it, 358 children from two large and ethnically diverse schools in San Jose, California, which served the third through eighth grades, were administered a modified version of Harter's scale designed to permit the independent assessment of reported intrinsic and extrinsic motivation. In our adaptation of Harter's scale, each original question from her scales of challenge, curiosity, and independence was divided into two separate questions, yielding both an intrinsic motivation and an extrinsic motivation item.

Thus, a question that had initially asked children to say whether they were more like "some kids [who] ask questions in class because they want to learn new things" or more like "other kids [who] ask questions because they want the teacher to notice them" would be converted into two items: "I ask questions in class because I want to learn new things" (intrinsic item) and "I ask questions in class because I want the teacher to notice me" (extrinsic item). The respondents were then asked to rate each such item on a five-point Likert scale, with one being "not at all like me" and five being "very much like me," as shown in the bottom panel of Figure 2.1. These choices were illustrated with a line of boxes of increasing size, and students were given explicit training on a number of pretest items, to be sure that they understood how to use the scales provided.

A first issue, then, is whether intrinsic motivation and extrinsic motivation toward one's schoolwork, if assessed independently, will in fact prove mutually exclusive. Our findings indicate that this is not, in fact, the case. Overall, the correlation between separate composite measures of intrinsic and extrinsic motivation proved slight,  $r = -.14$  and, although statistically significant,  $p < .01$ , clearly accounted for only a tiny fraction of the variance. Across the three component measures of intrinsic and extrinsic motivation, moreover, there was clear inconsistency. On the one hand, the correlation between curiosity/interest versus desire for teacher ap-

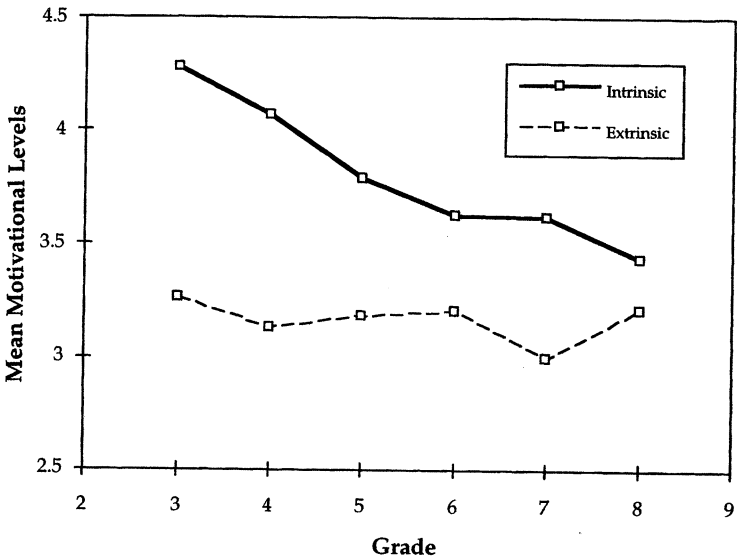


Figure 2.3. Overall intrinsic motivation and overall extrinsic motivation, by grade.

proval was actually positive,  $r = .22$ ,  $p < .001$ ; on the other, the correlation between a desire for challenge versus a desire for easy work was fairly strongly negative,  $r = -.53$ ,  $p < .0001$ , whereas the correlation between independent mastery attempts versus dependence on teacher guidance proved negative, but quite slight,  $r = -.16$ ,  $p < .01$ . This relative independence of the two scales was also apparent within each grade level.

Given the relative independence of these two forms of motivation, it is of particular interest to reexamine the separate developmental trends for measures of both intrinsic and extrinsic motivation. The relevant data for our composite measures of intrinsic and extrinsic motivation are presented in Figure 2.3, and the separate data for each of the subscales are presented in Figure 2.4. They tell an interesting story.

For intrinsic motivation, on the one hand, the findings seem quite clear. For the composite measure, we find a highly significant and monotonic decline in overall intrinsic motivation,  $F = 12.35$ ,  $p < .0001$ , as children progress from third grade ( $M = 4.28$ ,  $SD = .48$ ) through eighth grade ( $M = 3.44$ ,  $SD = .48$ ). This overall gradual decline in intrinsic motivation was also found to be independently significant for each of the three component measures of preference for challenge,  $F = 11.33$ ,  $p < .001$ , of curiosity/interest,  $F = 14.22$ ,  $p < .001$ , and of independent mastery,  $F = 4.27$ ,  $p < .001$ .

For extrinsic motivation, by contrast, there was no significant main effect of grade,  $F = 1.43$ , n.s. The average level of overall extrinsic motivation ( $M = 3.20$ ,  $SD = .52$ ) did not vary across grade level. Nor were there any significant developmental trends for either desire for easy work or dependence on teacher guidance.

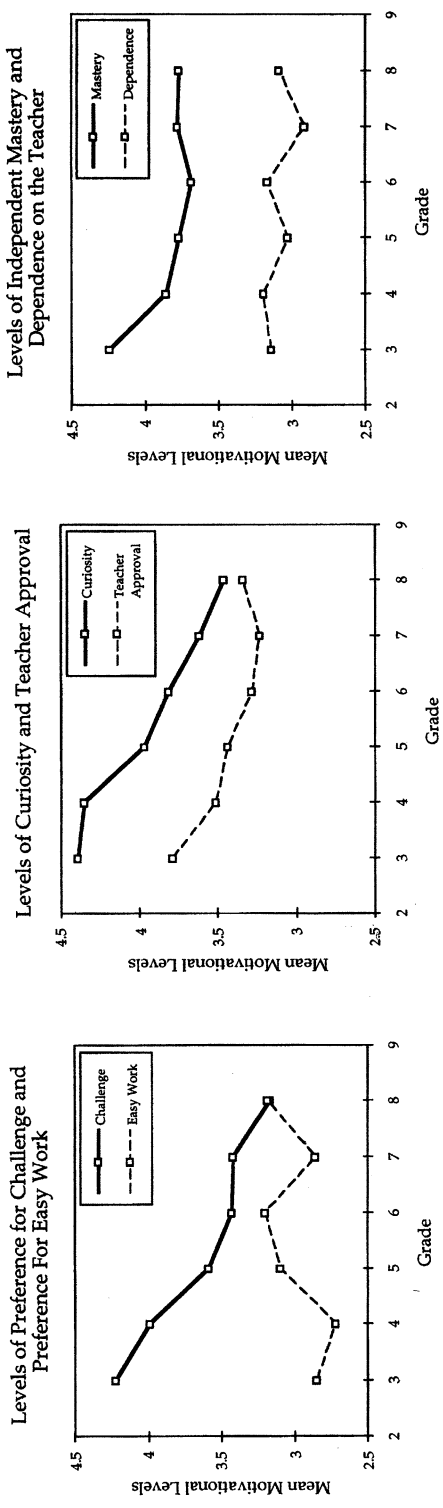


Figure 2.4. Intrinsic motivation and extrinsic motivation for the three component scales of challenge, curiosity, and mastery.

Only the component measure of desire for teacher approval showed any significant effect of grade,  $F = 4.48$ ,  $p < .001$ . Moreover, the effect shown on this one component was a gradual decline, rather than an increase, in extrinsic motivation from third ( $M = 3.79$ ,  $SD = .80$ ) through eighth grade ( $M = 3.34$ ,  $SD = .59$ ).

These findings replicate and clarify Harter's original developmental results. Even when intrinsic motivation and extrinsic motivation are assessed separately, we continue to find a steady decline in reported intrinsic motivation with increased age and grade. At the same time, there is no evidence of a complementary increase in reported extrinsic motivation during this period. Instead, extrinsic motivation remains relatively constant or shows, if anything, a slight parallel decline.

### *Other developmental findings*

These new findings give added weight to the argument that there is indeed an important developmental decline in students' intrinsic motivation in the classroom. Because even these most recent findings still share many particulars of methodology with other results obtained using Harter's scale, it may be important to note, as well, comparable findings from other studies using very different measures.

Epstein and McPartland (1976), for example, created measures to assess children's satisfaction with school, their commitment to classwork, and their attitudes toward their teachers. These measures were then administered to over 4,000 students in the 5th, 6th, 7th, 9th, and 12th grades. The authors report a steady decline in students' ratings, on a composite of these measures which the authors term "quality of school life," from 5th through 12th grade. Similarly, Haladyna and Thomas (1979) administered measures of children's attitudes toward school in general to a sample of nearly 3,000 students from grades 1 through 8 and reported a steady decrease in the positivity of students' attitudes toward school from the 1st through the 8th grade.

Using a very different methodology, Sansone and Morgan (1992) asked groups of kindergarten and first-graders, fifth- and sixth-graders, and college undergraduates to describe activities they found intrinsically motivating, both in and outside of school, and to indicate for each activity how much they enjoyed it and how much they would like to repeat the experience. With increases in age and grade, they found – for the school-based activities only – systematic decreases in reported intrinsic motivation, both in terms of their enjoyment of, and their willingness to repeat, the activity.

Still other studies have focused on differences in attitudes toward, and satisfaction with, school between children in the elementary and children in the middle-school years. Across a wide variety of measures and samples, as reviewed in detail by both Anderman and Maehr (1994) and Eccles and Midgley (1990), a dozen different authors have documented decreases in reported motivation, interest, or liking for school from the elementary-school to the middle-school years.

Finally, some further data regarding potential developmental changes in intrinsic motivation have also been reported by Adele Gottfried (1985) in her article describing the development of her Children's Academic Intrinsic Motivation Inventory – another self-report scale also designed to measure children's intrinsic motivation for school learning, but to do so separately for four different specific curriculum areas (namely, reading, math, social studies, and science) as well as in general. Perhaps because Gottfried's studies examined a narrower age distribution (i.e., fourth through seventh, or fifth through eighth grades), she reports relatively few significant developmental effects. Reported intrinsic interest in reading, however, does show reasonably large and significant declines with increases in age and grade in two of her three studies.<sup>4</sup>

### *Summary*

On balance, the results of the many studies that have thus far examined developmental trends in intrinsic motivation provide fairly strong evidence that students' reports of their intrinsic motivation in school in general and their interest in the subjects taught there decrease with age and grade in school – at least in the range from third through ninth grade. By contrast, the only direct developmental data that we have concerned specifically with developmental trends in extrinsic motivation suggest little consistent change with age across this same grade range.

### **Developmental trends: A discussion**

If we accept these conclusions, the next evident question is, What should we make of this pervasive decrease in intrinsic motivation? Is it "real"? Does it matter? If so, what causes it? And, if so, what might be done about it? A consideration of these questions will form the substance of the following discussion.

#### *Is it real? Does it matter?*

In view of these widespread developmental decreases in reported intrinsic motivation, a first obvious question is whether these decreases are "real" or merely apparent. That is, do these findings represent actual changes in general motivational patterns that might influence children's choices, activities, and learning across situations – as the authors of these studies would suggest? Or, do these apparent developmental effects reflect merely stylistic or linguistic changes specific to children's responses to explicit questions concerning their motivations – changes, for example, in students' willingness to describe themselves as really interested in their schoolwork, in the standards of comparison they use in answering such questions, or in their perceptions of the socially desirable answers? Are these, in short, differences that "make a difference"? Although the answer to these questions is not

as well documented as one would like, several lines of evidence suggest that the reports children give on these questionnaire measures of intrinsic motivation do reflect some realistic differences in their motivational orientations.

A first line of evidence for the construct validity of these scales comes from studies that have compared students' self-reports with the reports of others who know them well. Here, the most common technique has been to compare students' self-reports of intrinsic versus extrinsic motivation with teachers' reports concerning the motivational orientations of those students, although this has been done using a number of somewhat different specific procedures. Harter (1981), for instance, asked the teachers of the students she surveyed to rate their pupils' motivation using an abbreviated version of the same scale the children had filled out about themselves. With this procedure, she found highly impressive correlations between teachers' ratings and students' self-reports, with  $r$ 's ranging from .61 to .73.

Other investigators, using slightly different techniques, have found similar, though typically less striking, correlations. For instance, both Gottfried (1985, 1990) and the present authors found significant correlations between students' reports of their own levels of motivation in school and simple Likert-scale ratings of those students' motivational levels obtained from their classroom teachers. Similarly, Dollinger and Seiters (1988) found significant correlations between students' self-reports and measures of their general intrinsic motivational orientation computed from selected theoretically relevant items from their mothers' Q-Sort descriptions of them. Thus, the tendencies that students report about themselves on these measures also seem apparent to others who know these students well.

A second form of evidence concerning the validity of these scales takes a different tack, by examining the correlations between children's reports of their motivational orientations and various external and more "objective" indices of school performances that have been hypothesized to depend, in part, on those motivational orientations. Several studies, for instance, have reported significant positive correlations between intrinsic motivational orientation and performance on various standardized achievement tests (e.g., Boggiano, Shields, Barrett, Kellam, Thompson, Simons, & Katz, 1992; Gottfried, 1985, 1990); others have reported positive correlations between intrinsic motivational orientation and classroom grades (e.g., Gottfried, 1985). Still others working with academically problematic populations (e.g., Dollinger & Seiters, 1988) have reported negative correlations between intrinsic motivation and academic failure (i.e., having been retained in one or more grades).

Third, there are two findings that seek to speak to the issue of scale validity by examining specific, predicted behavioral correlates of reported intrinsic interest in school, but only for the specific subscale of preference for challenge. For this one scale, however, both Harter (1981) and Boggiano et al. (1992) report positive relationships between reported intrinsic motivation, in terms of a preference for more difficult and challenging work, and students' specific preferences when offered



choices among different levels of difficulty of some particular activity (e.g., whether they would like to work on 3-, 4-, 5-, 6-, or 7-letter anagrams). Unfortunately, comparable investigations of the behavioral concomitants of differences in reported curiosity and independence have not yet been undertaken.<sup>5</sup>

Finally, there are a few findings concerning the relevance of these scales to children's emotional or behavioral problems. Thus, several studies have reported an association between an extrinsic motivational orientation and high levels of anxiety over academic performance (Deci & Ryan, 1985; Gottfried, 1985, 1990). Still other studies have suggested a link between children's extrinsic motivational orientation and their vulnerability to helplessness in the face of failure, and possibly even their susceptibility to depression (Boggiano, Main, & Katz, 1991; Boggiano et al., 1992).

Overall then, these several lines of evidence, though less complete than one would hope, do suggest that the reported declines in intrinsic motivation in school with increasing age and grade represent a more general phenomenon of some substantive theoretical and practical significance. If so, the obvious next question is what causes these developmental declines in intrinsic motivational orientation.

#### *What causes it?*

In thinking about the causes of this developmental decline, three initial considerations seem of paramount importance. First, this phenomenon appears to be specifically related to students' perceptions of their *schoolwork*, rather than to some more general orientation. In studies where children are asked comparable questions about nonschool activities (e.g., Sansone & Morgan, 1992), developmental declines are not seen. Nor, in the very few studies reporting explicit developmental data on specific behaviors presumed to be indicative of intrinsic motivation, has there been any evidence of developmental decreases in intrinsic motivation (cf. Harter, 1978).

Instead, and this is the second important point about this phenomenon, most of our developmental theories about intrinsic motivation, as well as a few scattered supportive findings, might have led one to expect, if anything, a precisely opposite developmental effect. Thus, a variety of theorists have postulated that many forms of intrinsic motivation may be produced or augmented by a process of progressive "internalization" of initially external incentives and constraints (e.g., Deci & Ryan, 1985, 1991; Harter, 1978; Maslow, 1954; Rigby, Deci, Patrick, & Ryan, 1992). Here, at least in principle, these types of intrinsic motivation would be seen as developmentally "higher" forms.

In similar fashion, one might also find support for this opposing view in the scattered findings involving developmental variables other than age. With the singular exception of the "disadvantaged" Israeli students studied by Tzuriel (1989), for example, students identified by independent diagnostic criteria as mentally retarded or academically problematic have been shown to display much less intrinsic

and/or more extrinsic motivational orientations than their more "average" counterparts (Dollinger & Seiters, 1988; Harter, 1981). Indeed, in the most extensive and elegant study of this sort, Harter and Zigler (1974) showed normal children to display behavioral evidence of higher levels of curiosity, of desire for independent mastery, and of preference for challenge than either institutionalized or noninstitutionalized retarded children of a comparable mental age. Likewise, students who see themselves, and are seen by others, as less competent, rate themselves as less intrinsically and more extrinsically motivated than their more competent peers (e.g., Boggiano, et al., 1992).

The third point to be kept in mind in evaluating potential causes of the developmental decline in intrinsic motivation is rather more technical. Cross-sectional developmental trends of this sort could reflect either fairly broad-based and general effects across a population, or more localized effects in some smaller subset of that population. Perhaps the trends we have examined, in particular, might reflect a small but gradually increasing group of "motivational dropouts," who have disidentified with the goals and practices of school (cf. Steele, 1992).

Fortunately, there is a clear empirical test of this family of explanations: If the declines we have seen were the result of a progressive increase in the number of totally alienated students, there should be a corresponding gradual increase with age and grade in the variability of children's scores on these measures. This, however, is not the case. Indeed, in our own data, for instance, there are no changes in the variances with grade, and the trends are in the opposite direction on each of the scales. Similar results are also apparent in the standard deviations reported by grade for Harter's (1981) original scale of intrinsic versus extrinsic motivation, as well as for measures of general attitudes toward school reported by Epstein and McPartland (1976) and Haladyna and Thomas (1979). Thus, it would appear that the phenomenon involves more widespread and gradual changes.

What could it be, then, that happens as children grow and progress through school that produces these systematic decreases in their intrinsic interest in the work they undertake there? No doubt, there is no single answer to this question, and certainly there are no compelling data to help one choose among alternative possibilities. Nonetheless, let us examine some of the possible contributing factors.

One theoretically obvious possibility, stemming directly from previous literature in this area, is that the heavy use of extrinsic incentives and constraints in schools these days may result, over time, in the progressive undermining of children's intrinsic interest in the subjects they study in school. Of course, as we have already noted, the mere ubiquity of tests, grades, and other extrinsic contingencies does not by itself mean that intrinsic interest will be subverted, because grades and the like can have both informational components that could heighten intrinsic interest and controlling components that could decrease intrinsic interest (cf. Deci & Ryan, 1985; Kruglanski, 1978; Lepper & Greene, 1978).

However, observational studies by Deci and colleagues (e.g., Deci, Schwartz, Scheinman, & Ryan, 1981), Dweck and associates (e.g., Dweck, Davidson, Nelson,

& Enna, 1978), and others (e.g., Dreeben, 1968; Jackson, 1968; Silberman, 1970) have shown just how focused on control the contingencies of the typical classroom are. Winnett and Winkler's (1972) systematic analysis of the uses of extrinsic incentives in classrooms, for instance, shows a preponderance of attention paid to rewarding students for being "quiet," "still," and "docile." Moreover, several studies employing tests and grades in a seemingly "typical" fashion have indeed shown detrimental effects on intrinsic motivation and learning (e.g., Benware & Deci, 1984; Grolnick & Ryan, 1987; Harter, 1978; Rigby, Deci, Patrick, & Ryan, 1992).

A second potential contributing factor to the observed developmental decline in intrinsic motivation in school might be what Bruner (1962, 1966) first referred to as the "decontextualization" of learning that takes place in schools and appears to increase with increasing grade in school. At least in the typical school in our country, we deliberately seek to divorce the learning of academic skills from the natural contexts in which their inherent utility might be obvious to students. Instead, we usually try to teach subjects in their most abstract form, presumably because we believe that this sort of abstract presentation will result in more generalizable learning than learning of the same material in any particular concrete context. Inherent in this pedagogical practice is a sacrifice of potentially critical motivational appeal (e.g., Condry & Chambers, 1978; Ginsberg, 1977; Perkins, 1992). Indeed, more generally, one might argue that as children grow older, schools are likely to make fewer and fewer motivational "concessions," but become instead more likely to presume that students ought to be able and willing to learn material even when it is no longer "sugarcoated" for them.

Still another set of potentially significant contributing factors has been discussed in detail by Eccles and Midgley (1988, 1990). Focusing on the transition from elementary to middle school, they note that with increasing grades, schools tend to become more impersonal, more formal, more evaluative, and more competitive. These changes in the social context that schools provide for students, they argue, fit poorly the social-developmental needs of children. Just as students are entering adolescence and are seeking greater autonomy, the school environment in which they are situated is becoming more controlling and constrained.<sup>6</sup>

### *What can be done about it?*

Most likely, all of these factors and perhaps others may contribute to the loss of intrinsic motivation that we see in schools – although there are no compelling comparative findings available to test any of these hypotheses directly. If these factors do play a significant part in the phenomenon of declining intrinsic interest, however, they might suggest several obvious possibilities for the redesign of classrooms that might help to avoid this negative effect.

To the extent that the prevalence of highly controlling systems of extrinsic con-

tingencies and constraints is indeed involved in the observed developmental decline in intrinsic motivation, the obvious implication would be to modify the way in which extrinsic incentives are employed in classrooms accordingly. Although there is not space here for an extended discussion, at least three complementary approaches for implementing such changes suggest themselves, ranging from the relatively microscopic to the relatively macroscopic.

At one extreme, a number of experimental studies have suggested that, at least in the laboratory, even small differences in the wording of otherwise identical extrinsic contingencies – to highlight either the student's own competence or the teacher's control over the student – can influence the likelihood that those contingencies will have positive or negative effects (e.g., Boggiano & Main, 1986; Boggiano, Main, & Katz, 1988; Pittman, Davey, Alafat, Wetherill, & Kramer, 1980; Ryan, 1982). Similarly, in the laboratory, small differences in the description of the goals of an activity to emphasize either how much one can learn or how well one can perform can similarly have large effects on students' motivation and learning (e.g., Dweck, 1986; Dweck & Leggett, 1988; Heyman & Dweck, 1992). In both cases, one might imagine programs designed to modify these specific aspects of teachers' classroom presentations of contingencies.

At a more general level of analysis, one might similarly imagine interventions based on studies of existing differences among teachers in their more general emphasis on autonomy versus control in the classroom, of the sort studied by Deci and associates (1981) and by Boggiano and colleagues (1992). Or, one might imagine programs designed to shift teachers' models concerning classroom performance from what Dweck (1986) has termed "entity-based" theories to "incremental" theories – that is, from theories that attribute performance primarily to stable characteristics of the student to theories that stress the malleability of students and their potential susceptibility to effective instruction. Finally, at the macroscopic extreme, one might imagine attempts to alter more centrally the characteristic structure of the classroom, such as to shift the typical focus from comparative assessment to the documentation of individual mastery, or to encourage more cooperation and less competition in the classroom (cf. Deci & Ryan, 1985; Nicholls, 1988).

In parallel fashion, to the extent that the standard practice of decontextualization of learning may be in part responsible for the decline in intrinsic motivation in school, one can imagine interventions targeting this practice for reform. And, once again, there is an array of possibilities for modifying current practices, ranging from the quite concrete to the relatively wide-ranging.

At a relatively specific level, a number of recent laboratory studies have demonstrated the potentially powerful beneficial effects of seemingly minor manipulations that place traditional abstract learning activities in some concrete, meaningful context for learners. Embedding educational problem-solving activities even in briefly described, but motivationally appealing, concrete situations, for example, has been shown not only to increase students' interest in these activities, but also to promote more effective learning and the use of more efficient and systematic problem-solving skills (e.g., Cordova & Lepper, in press; Lepper &

Cordova, 1992; Parker & Lepper, 1992). Moreover, all of these beneficial effects on motivation and learning can be shown to increase significantly if the concrete context is personalized on the basis of students' interests, backgrounds, or specific choices (e.g., Anand & Ross, 1987; Cordova & Lepper, 1996; Ross, 1983).

At a higher level, these same considerations underlie considerably more general calls for the increased use of what has been termed the "project approach" to schooling (e.g., Edwards, Gandini, & Forman, 1993; Katz & Chard, 1989) – an idea that dates back at least to John Dewey (1913, 1938). In this model, the goal is to integrate a variety of traditional curriculum goals into the pursuit of long-term projects selected on the basis of students' demonstrated interests. Whether the particular goal is to teach mathematics in the context of running a store or computing statistics for a school team, or to embed science education in the running of an amateur meteorological station or language skills in the production of a classroom newsletter, such techniques share the aim of enhancing motivation and learning by situating instruction in meaningful and interesting concrete contexts.

Finally, to the extent that declines in intrinsic motivation may be due to the more general social characteristics of schools elaborated by Eccles and Midgely (1988, 1990), efforts at amelioration might take yet a different tack. Proposals for the integration into regular classrooms of techniques such as reciprocal teaching (e.g., Palincsar & Brown, 1984), cross-age or peer tutoring (e.g., Levin, Glass, & Meister, 1984), apprenticeship learning (e.g., J. Brown, Collins, & Duigood, 1989; Rogoff, 1990), and communities of collaborative learning (Aronson, Blaney, Stephan, Sikes, & Snapp, 1978; A. Brown, Campione, Reeve, Ferrara, & Palincsar, 1991; Campione, Brown, & Jay, 1992) all share the goals of promoting student autonomy and interest.

### **Intrinsic versus extrinsic motivation revisited**

Implicit, but hardly hidden, in virtually all of the foregoing discussion is an important premise regarding the value, the importance, and the utility of intrinsic motivation for students. Indeed, as described in some detail, we believe that there are data that demonstrate a variety of beneficial consequences of high levels of intrinsic motivation. At the same time, because almost all of the relevant studies have tended to examine intrinsic motivational orientations only in contrast to extrinsic motivational orientations, one could argue that there is a second, less evident, implicit premise in these studies assigning less value or significance to students' extrinsic motivation. In this final section, we examine and question this latter seductive, but only rarely explicit (e.g., Kohn, 1993), extrapolation.

#### *In defense of extrinsic motivation?*

Success in school, and in much of life outside of school, we would argue, may require at least a modicum of both intrinsic and extrinsic motivation (cf. Heyman

& Dweck, 1992; Jackson, 1968; Lepper, 1983a; Nisan, 1992). The very existence of an institution we call "compulsory schooling" is itself a recognition of the fact that our society is unwilling to limit the content of what is taught in school to the set of tasks and topics that students happen to find (or, even, can be made to find) interesting and enjoyable – and appropriately so. The acquisition of many fundamental skills requires hard work and discipline. Mastery of new material will frequently necessitate persistence in the face of an array of initial difficulties and failures. Even ignoring society's demands, the accomplishment of any individual's personal long-term goals will typically require many short-term sacrifices.

This raises some very interesting, if completely unstudied, questions. If one suggests, as we have in this review, that it is possible to assess separate intrinsic and extrinsic motivational orientations that may be largely independent of one another, then one might ask what combination of the two might best predict achievement and other outcomes for different children. Indeed, in this particular sense, possible analogies to the classic literature on "internal" versus "external" locus of control (e.g., Lefcourt, 1973; Rotter, 1966), or Erikson's (1950) "psychosocial" conflicts, suggest themselves. Perhaps too exclusive a preoccupation with either intrinsic or extrinsic motivation may have deleterious effects – though presumably of predictably different sorts. A student driven only by intrinsic motivation might be expected to run quickly afoul of the ubiquitous rules and regulations by which schools govern their pupils, and in the end to be seen as unruly, unresponsive, or antisocial. A student driven solely by extrinsic motivation, on the other hand, might be expected to fit more easily into the school setting, but to suffer more from the effects of chronic performance anxiety, and perhaps depression.

At the very least, these sorts of speculations would seem to suggest the importance of empirical research explicitly designed to evaluate the adaptive value of different forms of student motivation. At the same time, even an exhaustive investigation of these factors would leave unstudied one final consideration of potentially crucial importance – namely the development of other forms of "internalized," but neither purely intrinsic, nor extrinsic, motivation.

### *Internalization: A missing link?*

Although the contrast between intrinsic and extrinsic motivation highlights two distinctive and important forms of academic motivation, it fails to capture a third form of potentially equal importance. This third form involves the conceptually in-between case of initially imposed and purely extrinsic goals that, with socialization and development, come to be internalized and integrated into the individual's own value system (e.g., Lepper, 1983b; Rigby et al., 1992). We come to learn to do things not only because they are fun or likely to lead to some immediate payoff, but because we have come to believe that we "ought" to do them, either to facilitate our own long-term goals (i.e., because it would be "good for" us) or to

follow the norms of the group or the situation in which we find ourselves (i.e., because it seems the "right" thing to do).

Surely these sorts of motives assume increasing importance as students progress through school, or at least that is our hypothesis. It is also the main result of one relevant developmental study that analyzed the reasons that children from 5 through 15 gave in response to open-ended questions about why they engaged in a variety of different activities (Chandler & Connell, 1987). More specifically, when children were asked about activities they had said they liked, they gave, at all ages, comparable and predominantly "intrinsic" reasons. When they were asked about activities they had said they disliked, on the other hand, significant developmental trends were apparent: Across this age range, "extrinsic" reasons (e.g., "I study hard to satisfy my parents") decreased, being replaced instead with "internalized" reasons (e.g., "I study hard because I want to get into a good college").

Certainly, such considerations illustrate the wisdom of the inclusion in future developmental studies of this third category of potential academic motivations. Perhaps they even suggest the importance of taking as an explicit goal of the process of schooling the development of such internalized motivations (Lepper, 1983a), as well as the cultivation of intrinsic interests. As Thomas Huxley put the case a century 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; it is the first lesson that ought to be learned, and however early a man's training begins, it is probably the last lesson that he learns thoroughly."

## Notes

- 1 Many years later, we should note for the sake of completeness, Malone and Lepper (Lepper & Malone, 1987; Malone, 1981; Malone & Lepper, 1987) found it important to add yet a fourth general category – that of fantasy involvement – to the taxonomy of sources of intrinsic motivation. People derive inherent pleasure and motivation, they suggested, from participation in a world of fantasy and pretense, from identification with remote and/or fictitious characters and settings, and even, these days, through the vicarious experience of what has been called "virtual reality."
- 2 Although many theorists have viewed the desire for control in relatively unitary terms, others (e.g., Weisz, Rothbaum, & Blackburn, 1984) have suggested a distinction between "primary control" (i.e., striving to bring environmental events into line with one's wishes) and "secondary control" (i.e., striving to adjust oneself to environmental conditions – for example, by modifying one's own expectations, attributions, and interpretations of events – so as to control their impact, rather than the conditions themselves).
- 3 In addition to the three "motivational" dimensions considered here, Harter's (1981) full scale of intrinsic versus extrinsic motivational orientations also encompasses two "informational" dimensions regarding children's dependence on their teachers' judgments and on external criteria in defining success. However, across many studies, including Harter's original presentation, these informational dimensions have loaded on a second, separate "factor" in analyses and have displayed different correlates, consequences, and developmental trends than the motivational items of interest here (Dollinger & Seiters, 1988; Harter, 1981; Tzuril, 1989).
- 4 In fairness, it should be noted that Gottfried (1985) also reported a significant increase in

- intrinsic motivation toward social studies as children progressed from fourth through eighth grade. Other studies that have assessed attitudes toward specific school subjects, however, have not reproduced this latter finding. Haladyna and Thomas (1979), for instance, found decreases in reported attitudes toward social studies across this same age/grade range, while simultaneously replicating Gottfried's reported decrease in attitudes toward reading.
- 5 Newman (1990) does report, however, a positive relationship between scores on both Harter's (1981) challenge and independent mastery scales and third- and fifth-grade students' verbal reports of their willingness to seek help from their classroom teacher in mathematics.
  - 6 In our view, there is evidence showing both the relatively steady decreases in intrinsic motivation that we have focused on here and the relatively larger decreases in intrinsic motivation associated more specifically with the transition from elementary to middle school. Details of this latter literature can be found in Anderman and Maehr (1994) and Eccles and Midgley (1990).
  - 7 Despite the potential wisdom of Huxley's remarks, we should note that it is altogether too easy to take this position much too far. Just as John Watson (1924) once extrapolated from the possibility that children might be "spoiled" by their parents to grand pronouncements that mothers should avoid kissing or hugging their babies and should rely instead on head pats and handshakes to express approbation for a job especially well done, a surprising number of educators have expressed to us some version of the opinion that schools really "ought" to remain boring and unpleasant – in order to prepare children to get along in the tough and unpleasant world they will surely face when they graduate. Plainly, we would disagree.

## References

- Anand, P., & Ross, S. M. (1987). A computer-based strategy for personalizing verbal problems in teaching mathematics. *Educational Communication and Technology Journal*, 35, 151–162.
- Anderman, E. M., & Maehr, M. L. (1994). Motivation and schooling in the middle grades. *Review of Educational Research*, 64, 287–309.
- Aronson, E., Stephan, C., Sikes, J., Blaney, N., & Snapp, M. (1978). *The jigsaw classroom*. Beverly Hills, CA: Sage.
- Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of Clinical and Consulting Psychology*, 42, 155–162.
- Bem, S. L. (1993). *The lenses of gender: Transforming the debate on sexual inequality*. New Haven: Yale University Press.
- Benware, C., & Deci, E. L. (1984). Quality of learning with an active versus passive motivational set. *American Educational Research Journal*, 21, 755–765.
- Berlyne, D. E. (1960). *Conflict, arousal, and curiosity*. New York: McGraw-Hill.
- Berlyne, D. E. (1966). Curiosity and exploration. *Science*, 153, 25–33.
- Boggiano, A. K., & Main, D. S. (1986). Enhancing children's interest in activities used as rewards: The bonus effect. *Journal of Personality and Social Psychology*, 51, 1116–1126.
- Boggiano, A. K., Main, D. S., & Katz, P. (1988). Children's preference for challenge: The role of perceived competence and control. *Journal of Personality and Social Psychology*, 54, 916–924.
- Boggiano, A. K., Shields, A., Barrett, M., Kellam, T., Thompson, E., Simons, J., & Katz, P. (1992). Helplessness deficits in students: The role of motivational orientation. *Motivation and Emotion*, 16, 271–296.
- Brown, A. L., Campione, J. C., Reeve, R. A., Ferrara, R. A., & Palincsar, A. S. (1991). Interactive learning and individual understanding: The case of reading and mathematics. In L. T. Landsmann (Ed.), *Culture, schooling, and psychological development*. (pp. 136–170). Hillsdale, NJ: Erlbaum.



- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18, 32-42.
- Bruner, J. S. (1962). *On knowing: Essays for the left hand*. Cambridge, MA: Harvard University Press.
- Bruner, J. S. (1966). *Toward a theory of instruction*. Cambridge, MA: Harvard University Press.
- Campione, J. C., Brown, A. L., & Jay, M. (1992). Computers in a community of learners. In E. DeCorte & M. Linn (Eds.), *Computer-based learning environments and problem solving* (pp. 163-188). Berlin: Springer-Verlag.
- Chandler, C. L., & Connell, J. P. (1987). Children's intrinsic, extrinsic, and internalized motivation: A developmental study of children's reasons for liked and disliked behaviours. *British Journal of Developmental Psychology*, 5, 357-365.
- Condry, J. (1977). Enemies of exploration: Self-initiated versus other-initiated learning. *Journal of Personality and Social Psychology*, 35, 459-477.
- Condry, J., & Chambers, J. (1978). Intrinsic motivation and the process of learning. In M. R. Lepper & D. Greene (Eds.), *The hidden costs of reward* (pp. 61-84). Hillsdale, NJ: Erlbaum.
- Condry, J., & Lepper, M. R. (1992). Special issue: Intrinsic motivation and education. *Motivation and Emotion*, 16 (3), 157-296.
- Cordova, D. I., & Lepper, M. R. (in press). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. *Journal of Educational Psychology*.
- Cordova, D. I., & Lepper, M. R. (1996). The effects of intrinsic versus extrinsic incentives on the process of learning. Unpublished manuscript. Stanford University.
- Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety*. San Francisco: Jossey-Bass.
- deCharms, R. (1968). *Personal causation*. New York: Academic Press.
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18, 105-155.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Press.
- Deci, E. L. (1981). *The psychology of self-determination*. Lexington, MA: Heath.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska symposium on motivation* (Vol. 38, pp. 237-288). Lincoln: University of Nebraska Press.
- Deci, E. L., Schwartz, A. J., Sheinman, L., & Ryan, R. M. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology*, 73, 642-650.
- Dewey, J. (1913). *Interest and effort in education*. Boston: Houghton-Mifflin.
- Dewey, J. (1938). *Experience and education*. New York: Macmillan.
- Dollinger, S. J., & Seiters, J. A. (1988). Intrinsic motivation among clinic-referred children. *Bulletin of the Psychonomic Society*, 26 (5), 449-451.
- Dreeben, R. (1968). *On what is learned in school*. Reading, MA: Addison-Wesley.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, 41, 1040-1048.
- Dweck, C. S., Davidson, W., Nelson, S., & Enna, B. (1978). Sex differences in learned helplessness: II. The contingencies of evaluative feedback in the classroom and III. An experimental analysis. *Developmental Psychology*, 14, 268-276.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256-273.
- Eccles, J. S., & Midgley, C. (1988). Stage-environment fit: Developmentally appropriate classrooms for young adolescents. In R. E. Ames & C. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 139-186). New York: Academic Press.
- Eccles, J. S., & Midgley, C. (1990). Changes in academic motivation and self-perceptions during early adolescence. In R. Montemayor, G. R. Adams, & T. P. Gullotta (Eds.), *Advances in adolescent development: From childhood to adolescence* (Vol. 2, pp. 134-155). Newbury Park, CA: Sage.
- Edwards, C., Gandini, L., & Forman, G. (1993). *The hundred languages of children: The Reggio Emilia approach to early childhood education*. Norwood, NJ: Ablex.

- Epstein, J. L., & McPartland, J. M. (1976). The concept and measurement of quality of school life. *American Educational Research Journal*, 13, 15-30.
- Erikson, E. H. (1950). *Childhood and society*. New York: Norton.
- Ginsberg, H. (1977). *Children's arithmetic: The learning process*. New York: Van Nostrand.
- Gottfried, A. E. (1985). Academic intrinsic motivation in elementary and junior high school students. *Journal of Educational Psychology*, 77, 631-645.
- Gottfried, A. E. (1990). Academic intrinsic motivation in young elementary school children. *Journal of Educational Psychology*, 82 (3), 525-538.
- Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, 52, 890-898.
- Haladyna, T., & Thomas, G. (1979). The attitudes of elementary school children toward school and subject matters. *Journal of Experimental Education*, 48, 18-23.
- Harter, S. (1978). Pleasure derived from challenge and the effects of receiving grades on children's difficulty level choices. *Child Development*, 49, 788-799.
- Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components. *Developmental Psychology*, 17, 300-312.
- Harter, S., & Zigler, E. (1974). The assessment of effectance motivation in normal and retarded children. *Developmental Psychology*, 10, 169-180.
- Heyman, G. D., & Dweck, C. S. (1992). Achievement goals and intrinsic motivation: Their relation and their role in adaptive motivation. *Motivation and Emotion*, 16, 231-247.
- Holt, J. (1964). *How children fail*. New York: Holt, Rinehart, & Winston.
- Hunt, J. McV. (1961). *Intelligence and experience*. New York: Ronald Press.
- Hunt, J. McV. (1965). Intrinsic motivation and its role in psychological development. In D. Levine (Ed.), *Nebraska symposium on motivation* (Vol. 13, pp. 189-282). Lincoln: University of Nebraska Press.
- Jackson, P. (1968). *Life in classrooms*. New York: Holt, Rinehart & Winston.
- Katz, L. G., & Chard, S. C. (1989). *Engaging children's minds: The project approach*. Norwood, NJ: Ablex.
- Kohn, A. (1993). *Punished by rewards: The trouble with gold stars, incentive plans, A's, praise, and other bribes*. New York: Houghton Mifflin.
- Kruglanski, A. W. (1978). Endogenous attribution and intrinsic motivation. In M. R. Lepper & D. Greene (Eds.), *The hidden costs of reward* (pp. 85-108). Hillsdale, NJ: Erlbaum.
- Kruglanski, A. W., Friedman, I., & Zeevi, G. (1971). The effects of extrinsic incentives on some qualitative aspects of task performance. *Journal of Personality*, 39, 606-617.
- Lefcourt, H. J. (1973). The function of the illusions of control and freedom. *American Psychologist*, 28, 417-425.
- Lepper, M. R. (1983a). Extrinsic reward and intrinsic motivation: Implications for the classroom. In J. M. Levine & M. C. Wang (Eds.), *Teacher and student perceptions: Implications for learning* (pp. 281-317). Hillsdale, NJ: Erlbaum.
- Lepper, M. R. (1983b). Social control processes and the internalization of social values: An attributional perspective. In E. T. Higgins, D. N. Ruble, & W. W. Hartup (Eds.), *Developmental social cognition: A sociocultural perspective* (pp. 294-330). Cambridge: Cambridge University Press.
- Lepper, M. R. (1988). Motivational considerations in the study of instruction. *Cognition and Instruction*, 5, 289-309.
- Lepper, M. R., & Cordova, D. I. (1992). A desire to be taught: Instructional consequences of intrinsic motivation. *Motivation and Emotion*, 16, 187-208.
- Lepper, M. R., & Greene, D. (Eds.). (1978). *The hidden costs of reward*. Hillsdale, NJ: Erlbaum.
- Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic rewards: A test of the "overjustification" hypothesis. *Journal of Personality and Social Psychology*, 28, 129-137.
- Lepper, M. R., & Hodell, M. (1989). Intrinsic motivation in the classroom. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 73-105). New York: Academic Press.
- Lepper, M. R., & Malone, T. W. (1987). Intrinsic motivation and instructional effectiveness in com-

- puter-based education. In R. E. Snow & M. J. Farr (Eds.), *Aptitude, learning, and instruction: III. Conative and affective process analyses* (pp. 255–296). Hillsdale, NJ: Erlbaum.
- Lepper, M. R., Sagotsky, G., Dafeo, J., & Greene, D. (1982). Consequences of superfluous social constraints: Effects of nominal contingencies on children's subsequent intrinsic interest. *Journal of Personality and Social Psychology*, *42*, 51–65.
- Levin, H. M., Glass, E., & Meister, G. (1984). A cost-effectiveness analysis of four educational interventions. IFG Project Report No. 84-A11. Stanford, CA: Institute for Research on Educational Finance and Government.
- Maehr, M. L. (1976). Continuing motivation: An analysis of a seldom considered educational outcome. *Review of Educational Research*, *46*, 443–462.
- Malone, T. W. (1981). Toward a theory of intrinsically motivating instruction. *Cognitive Science*, *4*, 333–369.
- Malone, T. W., & Lepper, M. R. (1987). Making learning fun: A taxonomy of intrinsic motivations for learning. In R. E. Snow & M. J. Farr (Eds.), *Aptitude, learning, and instruction: III. Conative and affective process analyses* (pp. 223–253). Hillsdale, NJ: Erlbaum.
- Maslow, A. H. (1954). *Motivation and personality*. New York: Harper.
- Newman, R. S. (1990). Children's help-seeking in the classroom: The role of motivational factors and attitudes. *Journal of Educational Psychology*, *82*, 71–80.
- Nicholls, J. G. (1988). *Competence, accomplishment, and motivation: A perspective on development and education*. Cambridge, MA: Harvard University Press.
- Nisan, M. (1992). Beyond intrinsic motivation: "Sense of the desirable" as a link between responsible and effective teaching. In F. K. Oser, A. Dick, & J. Patry (Eds.), *Effective and responsible teaching: The new synthesis* (pp. 126–138). San Francisco: Jossey-Bass.
- Nuttin, J. R. (1973). Pleasure and reward in human motivation and learning. In D. E. Berlyne & K. B. Madsen (Eds.), *Pleasure, reward, preference* (pp. 243–274). New York: Academic Press.
- Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and monitoring activities. *Cognition and Instruction*, *1*, 117–175.
- Parker, L. E., & Lepper, M. R. (1992). Effects of fantasy contexts on children's learning and motivation: Making learning more fun. *Journal of Personality and Social Psychology*, *62*, 625–633.
- Perkins, D. (1992). *Smart schools: From educating memories to educating minds*. New York: Free Press.
- Pitman, T. S., Davey, M. E., Alafat, K. A., Wetherill, K. V., & Kramer, N. A. (1980). Informational vs. controlling verbal rewards. *Personality and Social Psychology Bulletin*, *6*, 228–233.
- Rigby, C. S., Deci, E. L., Patrick, B. C., & Ryan, R. M. (1992). Beyond the intrinsic-extrinsic dichotomy: Self-determination in motivation and learning. *Motivation and Emotion*, *16* (3), 165–185.
- Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.
- Ross, S. M. (1983). Increasing the meaningfulness of quantitative material by adapting context to student background. *Journal of Educational Psychology*, *75*, 519–529.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, *80*, whole no. 609.
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, *43*, 450–461.
- Sansone, C., & Morgan, C. (1992). Intrinsic motivation and education: Competence in context. *Motivation and Emotion*, *16*, 249–270.
- Silberman, C. (1970). *Crisis in the classroom*. New York: Random House.
- Steele, C. M. (1992, April). Race and the schooling of Black Americans. *Atlantic Monthly*, 68–78.
- Tang, S., & Hall, V. (1995). The overjustification effect: A meta-analysis. *Applied Cognitive Psychology*, *9*, 365–404.
- Tzurriel, D. (1989). Development of motivational and cognitive-informational orientations from third to ninth grades. *Journal of Applied Developmental Psychology*, *10*, 107–121.
- Watson, J. B. (1924). *Behaviorism*. Chicago: University of Chicago Press.

- Weisz, J. R., Rothbaum, F. M., & Blackburn, T. F. (1984). Standing out and standing in: The psychology of control in America and Japan. *American Psychologist*, *39*, 955-969.
- White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, *66*, 297-333.
- Winnett, R. A., & Winkler, R. C. (1972). Current behavior modification in the classroom: Be still, be quiet, be docile. *Journal of Applied Behavior Analysis*, *5*, 499-504.
- Zigler, E. (1966). Research on personality structure in the retardate. In N. R. Ellis (Ed.), *International review of research in mental retardation* (Vol. 1, pp. 77-108). New York: Academic Press.
- Zigler, E. (1971). The retarded child as a whole person. In H. E. Adams & W. K. Boardman (Eds.), *Advances in experimental clinical psychology* (pp. 47-122). New York: Pergamon Press.