specific? Can an intrinsic motivational orientation be implemented in schools, and when and where will it be effective? The articles present a broad range of views on these topics.

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Motivation and Emotion, Vol. 16, No. 3, 1992

Beyond the Intrinsic–Extrinsic Dichotomy: Self-Determination in Motivation and Learning[1]

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Researchers have typically portrayed intrinsic and extrinsic motivation as dichotomous. Although this dichotomy has explanatory utility, we present a differentiated view of extrinsic motivation, arguing that the relative autonomy of one's motivated actions is more useful for characterizing the motivational basis of learning than is the undifferentiated intrinsic–extrinsic dichotomy. Our concept of autonomous extrinsic motivation is based on a developmental analysis of the processes of internalization and integration. In this article we review extensive research indicating that intrinsic motivation and integrated internalization are facilitated by autonomy supportive social contexts, and that these autonomous forms of motivation, in turn, promote high-quality learning.

The word *learning* sparks for many people images of classrooms, tests, and teachers, along with recollections of memorizing materials, working on drill problems, and preparing for examinations. So vivid are people's associations of learning with rows of desks, sets of arbitrarily assigned facts, and evaluations by others that it is easy to forget how much learning occurs in myriad other contexts, often without controls or evaluations.

An enormous amount of learning takes place even before a child sets foot in a classroom, for example, and much of that learning accrues through the processes of interest, exploration, and assimilation. Learning also

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0146-7239/92/0900-0165$06.50

continues long after classrooms have been left behind. Learning goes on everyday, in factories and museums, on ballfields and street corners. People learn from the media, from conversations with friends, from life experiences, and this learning, too, occurs naturally as people engage the environment and attend to what interests them.

Broadly construed, learning refers to a life-long process in which organisms make contact with and assimilate their environment. Learning is thus among the most natural of psychological processes in the sense that the tendency to explore and to assimilate is an innate endowment of the human being. So basic is this tendency to develop through contact and assimilation that Piaget (1971) considered it the very essence of life. And this tendency is spontaneous in the true sense of the term: It is intrinsic to the organism and thus emanates from within.

Theorists who have accepted the idea that living beings are by nature actively assimilatory have also either explicitly or implicitly appreciated the idea of intrinsically motivated learning. Certainly this was true of the great educational thinkers like Montessori (1967), Dewey (1938), and Rogers (1969), each of whom argued that the important task of educators is providing aliment to an active learner rather than supplying motivation for a passive one. This perspective was also shared by Piaget (1952), who claimed that it is an innate tendency of animate structures to function so as to extend and elaborate themselves. The vigor with which theorists have argued for inherent and natural processes of learning and development reflects their conviction that nature provided us with motives for and highly effective methods of learning. These theorists hold that such intrinsic processes represent our greatest human resource.

In contrast, many theories of learning have taken a quite different view. They have portrayed learning as something that is made to occur by forces outside the organism; it is something imposed upon the learner. The currently dominant metaphor for such theories is the computer — a machine that is programmed from without and into which information is fed. Such theories have no way to deal with an intrinsic tendency to learn, and thus they have located the reasons for learning in such things as reinforcements or social controls. Ultimately they forgo human nature as the wellspring of learning, instead tracing the causes of learning to the separable outcomes that have followed from (Skinner, 1953) or are expected to follow from (Bandura, 1977) that learning.

The dichotomous theorizing that pitted learning as a natural, self-initiating process against learning as a conditioning or programming process provided the context within which discussions of intrinsic motivation and extrinsic motivation began. The concept of intrinsic motivation represented a starting point for the empirical exploration of the more natural

view of learning — the view that the impetus for learning and development is innate, needing only to be facilitated and nurtured rather than directed and controlled. In contrast, the concept of extrinsic motivation was more congenial to the reinforcement theories that dominated empirical psychology in the 1960s. With that as the backdrop, deCharms (1968) contrasted intrinsic and extrinsic motivation, suggesting that intrinsic motivation involved an internal perceived locus of causality (i.e., autonomy) whereas extrinsic motivation involved an external perceived locus of causality (i.e., heteronomy).

An unfortunate consequence of such polarized theorizing is that it often creates dichotomies that are overstated and reified. In this case, although the distinction between intrinsic and extrinsic motivation has been an important one, it is misleading when stated as a simple dichotomy. In this article, we argue that the relative autonomy of one's motivated actions, that is, the degree to which they are experienced as chosen and endorsed by one's self, is a more useful basis for characterizing learning than is the undifferentiated intrinsic–extrinsic dichotomy. To explicate the concept of autonomy, we begin with a discussion of intrinsic motivation, which is the prototype of autonomous functioning.

INTRINSIC MOTIVATION

The concept of intrinsic motivation gained its initial currency as an explanation for a variety of "spontaneous" behaviors like exploration of novel spaces (Montgomery, 1954) and manipulation of interesting objects (Harlow, 1953) — behaviors that seemed to occur independent of any reinforcement contingencies. Gradually, the concept was used increasingly widely to explain a broad range of learning, play, and achievement-relevant activities.

Intrinsically motivated behaviors are performed out of interest and thus require no "reward" other than the spontaneous experience of interest and enjoyment that accompanies them (Deci, 1992); they are said to be autotelic (Csikszentmihalyi, 1975). In contrast, extrinsically motivated behaviors are instrumental, performed for the external rewards or consequences that accrue from their performance. Thus, although intrinsically motivated activities occur naturally, it is typical for extrinsically motivated activities to require an initial prompt or the highlighting of an instrumentality.

White (1959), in one of the earliest discussions of intrinsic motivation, argued that spontaneous behaviors can be usefully understood in terms of people's need to feel competent or effective in dealing with their environment. Seeking to master the environment, he suggested, people take interest in and willingly approach novel stimuli and challenging tasks.

deCharms (1968) added that, in these mastery attempts, people need to feel like causal agents. Thus, Deci (1975) proposed that the innate psychological needs for competence and self-determination underlie intrinsically motivated behaviors.

Intrinsic and Extrinsic Motivation: Are They Antagonistic?

Widely cited early research on intrinsic motivation yielded the replicable finding that offering people extrinsic rewards for performing an intrinsically motivated activity tends to decrease their intrinsic motivation for the activity (e.g., Deci, 1971, 1972; Kruglanski, Freedman, & Zeevi, 1971; Lepper, Greene, & Nisbett, 1973; Ross, 1975). In interpreting these findings, Deci (1975) suggested that intrinsically motivated behavior is the prototype of self-determined or autonomous activity, and that the introduction of extrinsic motivators tends to undermine people's experience of self-determination and induce a shift in perceived locus of causality from internal to external (deCharms, 1968).

These early studies and dozens that followed them have tended to strengthen the view that intrinsic and extrinsic motivation are antagonistic, with intrinsically motivated behaviors' being considered self-determined and extrinsically motivated behaviors' being considered non-self-determined. Consequently, the combination of the two has been widely assumed to have negative consequences for intrinsic motivation.

Several studies that followed the early "undermining" experiments demonstrated, however, that under certain circumstances extrinsic rewards enhance intrinsic motivation (e.g., Harackiewicz, 1979; Ryan, 1982; Ryan, Mims, & Koestner, 1983). From these and other related studies, it became increasingly clear that extrinsic rewards are not necessarily detrimental to intrinsic motivation; indeed they can sometimes complement or increase intrinsic motivation. This suggests, then, that people can be self-determined even when offered extrinsic motivators.

Accordingly, subsequent discussions of self-determination theory (e.g., Deci & Ryan, 1985; Ryan, Connell, & Deci, 1985) have suggested that, although intrinsically motivated behaviors are by definition self-determined, extrinsically motivated behaviors can vary in their degree of self-determination. Extrinsically motivated behaviors are considered self-determined to the extent that they are fully endorsed by and congruent with one's sense of self — in other words, to the extent that they have an internal perceived locus of causality. In contrast, they are considered non-self-determined to the extent that they are coerced or pressured by an external contingency like a promised reward or by an internal self-esteem relevant contingency.

Our analysis of self-determined extrinsic motivation was formulated in terms of the developmental processes of internalization and integration. Central to organismic theories is the view that human beings have an inherent psychological tendency toward enhancement (Rogers, 1963), hierarchical integration (Werner, 1948), self-expansion (Angyal, 1965), organization (Piaget, 1971), synthesis (Nunberg, 1931), or organismic integration (Deci & Ryan, 1985).

The natural process of organismic integration, we theorize, operates simultaneously at the intrapersonal level where it promotes greater coherence in personality, and also at the interpersonal level where it promotes more satisfying relationships within the social milieu. Thus, the tendency toward assimilation or integration can lead people not only to do what interests them but also to internalize and integrate the value and regulation of activities that may not be interesting but allow them to feel both autonomous and related to others within the social world (Deci & Ryan, 1985, 1991). These processes of internalization and integration are the means through which extrinsic motivation can become self-determined and thus, like intrinsic motivation, can promote high-quality learning.

EXTRINSIC MOTIVATION: A DIFFERENTIATED VIEW

With the assumption that individuals naturally seek to internalize and integrate the regulation of extrinsically motivated behaviors that allow effective relating to the social world, Deci and Ryan (1985) distinguished four types of extrinsic regulation. Because these regulatory styles result from different degrees of internalization and integration, they can be placed along a continuum describing their degree of self-determination.

External regulation describes behaviors that are regulated by contingencies overtly external to the individual, like the promise of a reward or the threat of a punishment. An example would be a child who tries hard to do well on an assignment to get a gold star from the teacher. Although this behavior would be intentional, it is dependent on an external contingency and is thus said to be controlled by that contingency rather than being autonomous or fully "volitional."

Introjected regulation refers to behaviors that are motivated by internal prods and pressures such as self-esteem-relevant contingencies. It is this type of regulation that is present when one behaves because one thinks one *should* or because one would feel guilty if one did not. An example of introjected regulation would be a student who crams for an exam because she believes she has to do very well on it to think of herself as a good person. When a regulation has been introjected, it is internal to the person in the sense that it no longer requires overtly external prompts, but

it still remains separate from or external to the person's sense of self. It is as if the regulator and regulatee were different even though they are both within the same person. Introjected regulation, then, describes a form of internal motivation in which actions are *controlled* or coerced by internal contingencies rather than being self-determined. Thus, such behaviors are said to have an external perceived locus of causality (Ryan & Connell, 1989), for the source of their initiation, although internal to the person, is external to his or her integrated sense of self.

Identified regulation occurs when a behavior or regulation is adopted by one's self as personally important. Here people would not behave simply because they feel they should, but rather because of the personal importance of the behavior. This results when they have identified with the underlying value of the activity and accepted its regulation as their own.[3] It occurs as they begin to incorporate the value and regulation into their sense of self. An example of an identified regulatory process might be students who prepare very hard for the college entrance examination because going to college is personally important to them. These students study hard because doing well is instrumental for an important self-selected goal. The behavior is extrinsically motivated because it is instrumental, but it is relatively autonomous because of the person's having identified with its value and regulation. As illustrated previously, such regulation stands in contrast to students who prepare because they believe they "should" go to college like everyone else and will feel like a failure if they don't (introjected regulation), or because their parents are pressuring them to do so (external regulation).

Integrated regulation is the most autonomous or self-determined form of extrinsic motivation and results from the integration (or reciprocal assimilation) of separate identifications into one's coherent sense of self. For example, a parent might identify with being an authority figure as well as being a friend to his or her children. These two roles may be equally valued, and they may seem to conflict, but the roles can become integrated through a "creative synthesis" that allows the parent to fully accept and care for the child while at the same time setting limits for his or her behavior. In such cases the two values could co-exist harmoniously with each other and with other aspects of the self, thus not causing psychological stress for the individual. This form of regulation represents the endpoint of internalization and is indicative of the most mature regulatory style. When a regulation has been fully integrated, the person is less likely to feel controlled even by relevant coercive forces in the environment, instead

[3]Kelman (1958) and others have used the term identification to refer to identifying with another person, whereas we use it to refer to identifying with a value or regulatory process.

experiencing those forces as information relevant for making choices. According to self-determination theory, an integrated regulatory style is the most volitional, autonomous form of extrinsic motivation. Together with intrinsic motivation, it represents the basis for self-determined functioning, which in its fullest sense is characterized by a total involvement of the integrated self. Consequently, we use the qualities associated with intrinsically motivated behavior — things like cognitive flexibility, depth of processing, and creativity — as indicators of whether an extrinsic regulation has been fully integrated. Although these two forms of motivation differ in that intrinsically motivated behaviors are autotelic, whereas integrated behaviors are instrumental, they are importantly similar because they both represent autonomy or self-determination. As such they are both expected to lead to higher-quality learning and experience than are external and introjected regulatory processes.

It is worth noting that Kelman (1958) presented a conception of internalization that he used to explain attitude change, Lepper (1983) used to explain socialization, and O'Reilly and Chatman (1986) used to explain prosocial behavior in organizations. Kelman employed the term *compliance* to describe what we call external regulation, and he then distinguished between two types of what we call internalization, referring to them as *identification* and *internalization*. (Kelman thus used the term *internalization* more narrowly than do we and many other theorists.) Kelman's distinction was formulated in terms of the bases of behavior change, with identification referring to adopting a behavior because it is endorsed by a person with whom one has an important connection, and internalization referring to adopting a behavior because it is congruent with one's values. Although there is superficial similarity between Kelman's conception and ours (with our concept of introjection seeming to relate to Kelman's identification and our concepts of identification and integration seeming to relate to Kelman's internalization), the theories are really quite different, for Kelman's is not formulated to explicate differences in personal autonomy or self-determination. Thus, for example, Kelman's identification could include behavior change resulting either from being brainwashed by a powerful figure or from being optimally nurtured by one's parents. In our theory, the former would constitute introjection and the latter would likely lead to integration. Similarly, Kelman's internalization could represent either introjection or integration. In the former case, one would take in a behavioral regulation that is consistent with an introjected value and would thus do the behavior because one thinks one should and would feel guilty if one did not, whereas in the latter case, one would take in and integrate a behavioral regulation that is congruent with an aspect of one's integrated self and would thus do the behavior because one wants to, because it feels personally important.

Accordingly, we view Kelman's distinction as representing different bases for internalizing a regulatory process, but it does not account for whether such internalizations are merely introjected or are integrated into one's self (thus representing either less or more autonomous regulation).

MOTIVATION AND LEARNING

Several studies have related motivation to learning outcomes to test the general hypothesis that the degree of personal autonomy or self-determination one experiences while engaging in a learning task will affect the depth of information processing and thus the quality of one's learning. When one's self is more fully engaged in learning, whether through intrinsic motivation or integrated self-regulation, one will more fully understand and be more flexible in utilizing the newly acquired information.

Some studies have used spontaneous or nondirected learning paradigms to test this hypothesis, reasoning that when people are free from pressures to learn, the amount of their learning will be predicted by their interest and sense of personal autonomy. For example, Ryan, Connell, and Plant (1990) asked college-student subjects to read a passage and rate their interest in and enjoyment of the material. They then asked the subjects to rate how well they thought they understood the passage and gave the students an exam on the material. Results revealed a strong positive correlation between subjects' interest/enjoyment in the material and both their self-reported comprehension and actual recall of the spontaneously learned material. It appears, then, that intrinsic motivation, as reflected in interest and enjoyment, is an important contributor to people's spontaneous learning. Complementary results have been reported by Asher (1980).

Ryan, Schwartz, and Kasser (1991) also used a nondirected learning paradigm in their study of the relation between autonomy and learning. They assessed subjects' political ideology and related that to the subjects' value-congruent learning of specific information they had not previously encountered. Results indicated that subjects evidenced better retention of textual information that was consonant with their important political beliefs than of information that was not. The researchers interpreted this as an indication that the integrated political values catalyzed in the subjects a more active engagement and learning of relevant material.

Grolnick and Ryan (1987) employed a different type of paradigm to explore the relation between autonomy and learning. They had late-elementary-school children complete a questionnaire developed by Ryan and Connell (1989) to assess the children's reasons for doing their school work. These researchers found that when students reported more autonomous

reasons for doing their school work (viz., identified and intrinsic reasons), they displayed higher-quality learning than when they reported less autonomous reasons (viz., external and introjected reasons). Grolnick, Ryan, and Deci (1991) found further that perceived autonomy (i.e., identified and intrinsic reasons) was positively associated with classroom achievement.

Benware and Deci (1984) studied college students' learning using a directed-learning paradigm. These researchers found that subjects' self-reports of interest in assigned material, enjoyment of the material, and active involvement in learning covaried with their conceptual understanding of the material. Because the self-report variables reflected subjects' sense of autonomy and self-regulation in the learning process, this study provided further indication of a positive relation between autonomy and conceptual learning.

The effects on learning of ego involvement (when interpreted to mean having one's self-esteem contingent upon the outcome of performance) is also relevant here. Several studies (e.g., Plant & Ryan, 1985; Ryan, 1982; Ryan, Koestner, & Deci, 1991) have shown that ego involvement undermines intrinsic motivation, thus indicating that, much like introjected regulation, ego involvement is a form of controlling (rather than autonomous) motivation. Research and theory on ego versus task involvement by Nicholls (1984) and on performance vs. learning goals by Dweck (1986) are also consistent with our assertion that ego involvement (or performance goals) represents a less autonomous form of engagement than does task involvement (or learning goals).

In line with our suggestion that autonomy promotes a fuller engagement with learning materials and thus higher-quality learning, Golan and Graham (1990) and Nolen (1988) have recently reported that ego involvement leads to more superficial processing of information, using the Craik and Lockhart (1974) level of processing model. This suggests, then, in line with the findings from Grolnick and Ryan (1987) and Benware and Deci (1984), that when a deeper level of processing is necessary for high-quality learning, ego involvement will result in impaired learning (see also Covington, 1984).

Several other studies have expanded upon the findings that self-determined forms of motivation are related to enhanced learning. For example, Vallerand and Bissonnette (1992) reported that more controlling forms of motivation (viz., external regulation and introjected regulation) were positively correlated with dropping out of school, whereas more autonomous forms (viz., integrated regulation and intrinsic motivation) were negatively correlated with dropping out. Ryan and Connell (1989) found that both introjected regulation (i.e., more controlling

motivation) and identified regulation (i.e., more autonomous motivation) were positively correlated with children's self-reports of trying hard and their parents' reports of the children's motivation; however, introjection was also positively correlated with anxiety in school and maladaptive coping with failures, whereas identification was positively correlated with interest and enjoyment of school and positive coping with failures.

To summarize, these classroom and laboratory studies show that high-quality conceptual learning is promoted by relatively self-determined forms of motivation, whereas it is impaired by more controlling forms. We now turn to a discussion of social contextual factors that promote the development of self-determined forms of motivation, and then to the effects of these contextual factors on learning.

THE SOCIAL CONTEXT OF DEVELOPMENT AND LEARNING

Because intrinsically motivated behaviors have been theorized both to contribute to and be facilitated by one's feeling competent and autonomous (Deci, 1975), social contexts that support competence and autonomy are predicted to promote intrinsic motivation and, in turn, high-quality learning. Furthermore, because the processes of internalization and integration have been theorized both to contribute to and be facilitated by feelings of relatedness and autonomy, social contexts that support relatedness and autonomy are predicted to promote integrated internalization and in turn high-quality learning. Studies exploring these issues have been of two types: laboratory experiments that have examined the effects of specific external events like rewards and feedback; and field studies that have investigated the effects of the general climate or ambience that exists in contexts like classrooms and homes. We begin with a review of studies concerned with the effects of social contexts on motivation and then turn to studies of learning.

The Social Context and Motivation

Experiments manipulating specific events are widely cited and were the earliest of the studies in this area. In general, events that tend to have a *controlling* functional significance (i.e., that are experienced as pressure to perform in specific ways) have been found to undermine intrinsic motivation, whereas those that are experienced as *autonomy supportive* (i.e., as encouragement for self-initiation and choice) have been shown to maintain or enhance intrinsic motivation. With some limiting conditions; experiments have shown that material rewards (Deci, 1971, 1972), threats

of punishment (Deci & Cascio, 1972), evaluations (Smith, 1974), deadlines (Amabile, DeJong, & Lepper, 1976), imposed goals (Mossholder, 1980), and good player awards (Lepper, Greene, & Nisbett, 1973) all tend to be experienced as controlling and thus undermine intrinsic motivation, whereas providing choice (Zuckerman, Porac, Lathin, Smith, & Deci, 1978) and acknowledging feelings (Koestner, Ryan, Bernieri, & Holt, 1984) tend to be experienced as autonomy supportive and thus enhance intrinsic motivation.

Subsequent work has suggested, however, that although certain events tend, on average, to be either controlling or autonomy supportive, the style and language with which the events are administered significantly influence their effects. For example, Ryan, Mims, and Koestner (1983) found that when performance-contingent rewards were administered in a controlling style, using language like "if you do as you should," the rewards undermined intrinsic motivation relative to when the rewards were administered in a more autonomy supportive style with noncontrolling locution. Similar results were found with respect to setting limits on children's behavior (Koestner et al., 1984).

One can also see the subtle impact of the social context in the experiments on ego involvement. Ego involvement — the state in which one's self-esteem is on the line — is a form of internally controlling motivation, and experimental manipulations that stimulate this process of controlling oneself have been repeatedly shown to undermine intrinsic motivation (Butler, 1987; Plant & Ryan, 1985; Ryan, 1982; Ryan, Koestner, & Deci, 1991).

Numerous studies have focused on contextual elements that tend to enhance or undermine intrinsic motivation by either promoting or thwarting people's experience of competence. To be intrinsically motivating an activity must provide an optimal challenge, in other words, a challenge that exceeds current ability at a manageable level (Csikszentmihalyi, 1975; Deci, 1975). Thus, when a target activity is optimally discrepant from one's skill level, it tends to be highly intrinsically motivating relative to easier or harder tasks. Studies by Harter (1978) and Danner and Lonky (1981) have supported this hypothesis.

Other studies have shown that positive feedback tends to strengthen perceived competence and enhance intrinsic motivation, whereas critical, negative feedback tends to diminish perceived competence and decrease intrinsic motivation (e.g., Deci, 1971; Deci & Cascio, 1972; Vallerand & Reid, 1984). These effects, however, have been shown to depend on the (positive) feedback's being administered in an autonomy supportive way. Positive feedback tends to enhance intrinsic motivation by strengthening perceived competence only when the positive feedback pertains to self-determined

behavior or is presented noncontrollingly (Fisher, 1978; Ryan, 1982; Usui, 1991). We have typically referred to this positive feedback that is administered in an autonomy supportive fashion as being *informational.*

Several theorists have proposed that the ability to control outcomes and thus the feeling that one can effectively interact with the environment is an important motivational factor, and some consider it the critical factor for promoting intrinsic interest and learning (e.g., Bandura, 1977). The previously mentioned research by Ryan (1982) and others shows, however, that perceived control over outcomes and perceived efficacy are not sufficient for intrinsic motivation. A person can as easily be self-efficacious when controlled as when autonomous, yet the evidence is clear that being controlled is detrimental to intrinsic motivation.

As mentioned, individuals have an innate tendency to internalize the regulation of extrinsically motivated behaviors that are useful for skillful functioning in their interpersonal world. This internalization can, however, take the form either of integration, where the person identifies with the value of the activity and brings its regulation into coherence with other aspects of the self, or introjection, where the regulation is taken in but not integrated.

A laboratory experiment by Deci, Eghrari, Patrick, and Leone (in press) tested two hypotheses about social contexts and internalization: first, that internalization and integration will be facilitated by the autonomy support and interpersonal involvement of significant others; and, second, that internalization which occurs in controlling contexts will tend to be introjected whereas internalization that occurs in autonomy-supportive contexts will tend to be integrated.

In the experiment, Deci et al. (in press) found that three specific social contextual factors promoted internalization. They are: a meaningful rationale so the person will understand the personal importance of the activity; an acknowledgement of the person's feelings so he or she will feel understood by the other; and an interpersonal ambience that emphasizes choice rather than control.

Results of the experiment further revealed that in conditions supportive of self-determination (viz., those with two or three of the facilitating factors) the internalization that occurred was integrated, as reflected by positive correlations between behavioral self-regulation and self-reports of perceived choice, personal importance of the activity, and enjoyment. In contrast, when contexts failed to support self-determination (viz., those with one or no facilitating factors), the internalization that occurred was introjected, as reflected by negative correlations between behavioral self-regulation and the same three self-report variables.

Field Studies. Several field studies have also explored the effects of autonomy support and involvement of significant others on intrinsic motivation and internalization. For example, Deci, Schwartz, Sheinman, and Ryan (1981) developed a measure of autonomy support within the classroom that assessed the degree to which teachers attempt to motivate learning in an autonomy supportive versus a controlling manner. Children in more autonomy-supportive classrooms (i.e., in classrooms where teachers tend to take the student's frame of reference) displayed greater curiosity, more independent mastery attempts, and higher self-esteem than students in more controlling classrooms. Further, Ryan and Grolnick (1986) found that students who perceived their teaching environments as more autonomy-supportive tended to be more intrinsically interested in learning and to feel more academically competent.

Deci, Driver, Hotchkiss, Robbins, and Wilson (in press) did a study with mothers and their 5- to 7-year-old children in which each mother and child engaged in a free-play period followed by a period in which the mother left the child alone in the play room. The session was videotaped and every maternal vocalization was subsequently coded as being autonomy supportive, controlling, or neutral. The amount of time the child spent on the target activity when he or she was alone was also calculated and used as a measure of the child's intrinsic motivation for the play activity. Results revealed a significant negative correlation between maternal controllingness and children's intrinsic motivation, suggesting that the more controlling a mother is in her interactions with her child, the lower will be the child's intrinsic motivation.

The finding that autonomy support is associated with greater intrinsic motivation and autonomous self-regulation was also revealed in a study by Grolnick and Ryan (1989). They used parent interviews to examine the impact of parental autonomy support (vs. control) and involvement on children's capacity to be self-regulating and autonomous with respect to learning. Being autonomy-supportive was evidenced by a willingness to offer choice and to take the child's perspective into account when making decisions, whereas being controlling was characterized by the use of extrinsic contingencies like rewards,. punishments, and pressure to motivate the child. Parental involvement was evidenced by a parent's degree of willingness to devote time, attention, and resources to the child. Results indicated that both parental autonomy support and involvement contributed to the children's becoming more autonomously self-regulating in doing school work. Put differently, the parents' orientations promoted their children's identifying with the value of learning and being more interested in it.

The findings that autonomy support and involvement play an important role in facilitating intrinsic motivation, internalization, and related processes have also been extended to various settings beyond the classroom and home. For example, Deci, Connell, and Ryan (1989) found that the autonomy supportiveness of managers was positively associated with trust and satisfaction in their subordinates, and Williams (1991) reported that the autonomy support and involvement of the staff of a medically supervised weight-loss program was positively associated with both patients' attendance at weekly meetings and their weight loss. In general, it seems, when individuals interact with authorities, socializing agents, or significant others who are more autonomy-supportive and interpersonally involved, those individuals will be more likely to maintain interest and to integrate values and regulatory processes, resulting in greater self-determination and satisfaction.

The Social Context and Learning

A number of studies have focused on the extent to which contextual factors related to autonomy support and interpersonal relatedness influence people's learning. Grolnick and Ryan (1987) hypothesized that a focus on the extrinsic reward of grades would result in less depth of processing and subsequently less integration and mastery of learned material than would intrinsic motivation. They performed an experiment with late-elementary-school children to compare three conditions: a nondirected (or spontaneous) learning condition in which the students read a passage in order to report how interesting they found it; a directed learning condition in which the experimenter did not mention tests or grades but merely indicated that she was interested in what students learn; and a directed learning condition in which the experimenter informed the students that their learning would be tested and graded. The first two conditions were intended to promote greater autonomy whereas the third emphasized external controls. After reading the text, all students were tested, and results showed that although students in both directed learning conditions performed better on rote memorization than did the nondirected group, the external-control (i.e., grades) group evidenced the greatest deterioration of memorized facts over the subsequent week. Furthermore, the grades condition led to poorer conceptual learning of the material than the two conditions intended to support autonomy. Thus, the directed learning condition without external controls was the condition that led to high-level performance on all three criteria. On the criterion we consider most important, namely, conceptual understanding, both conditions intended to foster autonomous learning were significantly higher than the controlling condition.

Three recent experiments by Kage (1991; Kage & Namiki, 1990) have provided conceptual replications of the Grolnick and Ryan (1987) experiment in Japanese schools. Among other things, those studies showed that junior high school students who were given a series of five quizzes to be counted as part of their grade for the subject of medieval history (thus, a controlling evaluative condition) expressed less interest in the material, rated themselves as less competent, and reported greater anxiety than students who had been given the quizzes as a means of monitoring their own learning (thus, an autonomy-supportive condition). Furthermore, the students whose quiz scores comprised part of their course grade actually performed significantly worse on three of the five quizzes and also performed significantly worse on a summary exam at the end of the five sessions of the course segment. This work suggests, therefore, that graded quizzes, which are a widely used and a clearly controlling means of motivating students' learning, may actually backfire, not only causing negative affective reactions, but also poorer learning.

Benware and Deci (1984) also studied the effects of tests in examining the extent to which "active" vs. "passive" involvement with material affects conceptual learning. In their study, college students were asked to learn material so that they could put it to active use by teaching it to others, or they were asked to learn the material because they would be tested on it. The students who learned in order to be tested were considered controlled and they were expected to have a more passive involvement in the learning process. Results indicated that students in the active-involvement, autonomous condition showed greater conceptual understanding of the material than did students in the passive-involvement, controlled condition.

The importance of self-determination has also been demonstrated with respect to breaking mental sets. McGraw and McCullers (1979) found that subjects who were controlled with the offer of a financial reward for solving a series of similar problems had a harder time breaking their mental set when presented with a problem that required a different strategy than did subjects who were not offered a reward. In this case, the controlling reward can be understood to have undermined intrinsic motivation for problem-solving, resulting in less "cognitive flexibility." Condry and Chambers (1978) reported complementary results when subjects were offered financial rewards for a problem-solving task.

Amabile (1983) developed a method of consensual assessment for measuring the creativity of artistic projects, such as paintings and collages. She found that when subjects created artistic projects in response to controlling contingencies (e.g., evaluations, competition with others, or promised rewards), their work was judged to be less creative as compared to those who created art work in the absence of these controlling

pressures. All this evidence lends support to the notion that motivation for high-quality learning and performance can be maximized by providing autonomy support, thus affording the individual a greater sense of self-determination.

Other studies have explored the importance of interpersonal relatedness (particularly with parents) on students' engagement in the learning process. Grolnick, Ryan, and Deci (1991), for example, found that children's perceptions that their parents relate to them around school activities facilitated autonomous self-regulation and classroom achievement. Further, Grolnick and Ryan (1989) found a strong inverse relationship between the amount of parental involvement with their children and teachers' reports of how much attention they have to devote to those students. As Grolnick and Ryan pointed out, however, this added attention from teachers is not always positive, but instead is directed at managing behavior rather than facilitating learning. It seems to be the case that children whose parents are not very involved with them behave in school in ways that seem to elicit more attention from their teachers even if it is negative attention (Ryan & Grolnick, 1986; Ryan & Stiller, 1991).

The importance of involvement in the learning process was further demonstrated in a study of adolescents by Ryan, Stiller, and Lynch (1991). These researchers found that adolescents' perceptions of their parents' being involved and autonomy-supportive predicted the felt quality of relatedness to both their parents and teachers. Further, these representations of parents and teachers were significant predictors of various indices of school functioning. Thus it appears that involved, autonomy-supportive parents facilitate their children's having a solid foundation of trusting relationships not only with them but also with teachers. These relationships, in turn, play an important role in the learning process (Connell & Wellborn, 1990; Ryan & Powelson, 1991).

Learning in Varied Settings

The vast majority of the learning studies that have been done and that were reviewed in this article concern learning within formal school settings. Even those focused on parental involvement and autonomy support, for example, were studies of learning and achievement in schools.

The centrality of the role played by schools and universities within our culture has been a relatively recent development. Prior to World War II, for example, much more of young people's learning took place outside of schools within the context of close personal relationships with parents, families, and the greater community (Ryan & Powelson, 1991). Within those settings, one presumes, learning resulted either from a learner's being interested in something and pursuing it on his or her own or from a significant other in the learner's life valuing something and working closely with the learner to help him or her master it. Within the framework of self-determination theory, these two examples of learning would have underpinnings of intrinsic motivation and internalized motivation, respectively.

Consideration of the research herein reviewed and of anecdotes about "the old days" seems to point to similar conclusions about motivational factors that facilitate the learning process. First, they suggest that being related to others and perceiving that those others are interested or involved in one's learning process promote high-quality learning. Second, they suggest that when people feel free to engage the target activity or material — in other words, when the social context allows and encourages their self-initiation and choice — they are more likely to display high-quality learning, whether the learning pertains to interesting or uninteresting tasks.

Extrapolating these conclusions to learning that occurs in any setting — whether from reading magazines or inspecting a piece of equipment, at parties or concerts, while doing work or shopping — we would argue that support for autonomy is an essential ingredient for high-quality learning. Facilitating an individual's competence and relatedness is, as our research has shown, important, though we have found consistently that the facilitation of competence and relatedness must be accompanied by autonomy support for the person to be self-determined and to display high-quality learning.

CONCLUSIONS

Self-determination theory proposes that people have an intrinsic desire to explore, understand, and assimilate their environment. This motivation to actively engage one's environment is present from the very earliest stages of development and does not require external pressures to operate. Additionally, this innate motivation is implicated not only in the acquisition of cognitive skills but also in the development of self-regulation through the processes of internalization and integration (Deci & Ryan, 1991).

Defining learning broadly to include cognitive, affective, and relational dimensions and viewing learning as a process that is facilitated by contexts that support people's autonomy, competence, and relatedness allows for a discussion that transcends the academic and traditionally didactic milieu and allows a focus on all relevant ambient contexts. Such a focus

includes the home, classroom, and workplace, for example, as well as any general social environment. Across environments, but within the context of human relationships, the promotion of learning is best understood in terms of whether activities are optimally challenging and significant others are autonomy-supportive and involved. Contexts that are optimal in these regards have been found to facilitate proactivity and integration, and that active engagement has been found to result in internalization and integration of extrinsic motivation as well as higher-quality learning and cognitive activity.

Much of the work focusing on motivation in the learning process has taken a perspective that emphasizes the intrinsic–extrinsic dichotomy. As the research has continued, however, it has become increasingly clear that this simple dichotomy is inadequate for a full understanding of the motivational processes that underlie high-quality learning. Accordingly, we have focused on the processes of internalization and integration to provide a differentiated conception of extrinsic motivation and to explain how certain forms of extrinsic motivation, together with intrinsic motivation, constitute the basis for self-determined functioning. Research studies have increasingly shown that when social contexts, wherever they be, support self-determined motivation, conditions are optimal for high-quality learning.

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