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3 The Relation of Interest to the Motivation of Behavior: A Self-Determination Theory Perspective

Edward L. Deci
University of Rochester

Anyone who has observed young children knows that it is natural for them to be active and attentive during most of their waking hours. When free from biological urges, they direct their energy and attention to activities they find *interesting*. For long periods of time they pile blocks, dress dolls, push boxes, empty jars, throw balls, or make their dinosaurs walk and talk. And they do these activities without prods or pushes; indeed, they sometimes persist in spite of prods or pushes to the contrary.

For parents, this can be both gratifying and disconcerting. Because *interest is a powerful motivator*, children entertain themselves with activities that interest them, and they learn about their world by doing so. However, they sometimes continue with these activities rather than doing other things that parents judge more important for learning or social harmony. In fact, children may resist and become irritable when their parents try to direct their attention away from what interests them.

Young children are not the only ones who are motivated by interest. Even adults can become wholly absorbed in an activity that has no payoff except the enjoyment they experience while doing it. Most often, such absorption occurs in leisure pursuits; that is, people typically pursue

Renninger, K. A., Hidi, S., Krapp, A. (Eds.)
(1992) *The Role of Interest in Learning and Development.*

avocations primarily because of interest in the activities. However, interest can also be an important motivator in one's vocation. In fact, because people who are interested in their work are typically committed to doing it well, many behavioral scientists have been exploring how to make jobs more interesting for people (e.g., Hackman & Oldham, 1980; Vroom & Deci, in press). Still, adults' behaviors are less often motivated purely by interest than are children's, because with adults the motivational propensity of "interest" is often mixed with other motivational forces such as evaluation apprehension, ego-involvement, social comparison, and habit.

The purpose of this chapter is to explore the motivating aspects of interest and the relation of interest to other motivational processes. To accomplish that, I present a conceptualization of interest from the perspective of self-determination theory (Deci & Ryan, 1985, 1987, 1991).

SELF-DETERMINATION THEORY IN BRIEF

Self-determination theory distinguishes between the motivational dynamics underlying activities that people do freely and those that they feel coerced or pressured to do. To be self-determining means to engage in an activity with a full sense of wanting, choosing, and personal endorsement. When self-determined, people are acting in accord with, or expressing, themselves. As a concept, then, self-determination describes the regulation of behaviors that emanate from what we call the *integrated self* (Deci & Ryan, 1991).

In explicating the motivational basis of self-determined behavior, I initially contrasted behaviors that are done simply for the personal reward of enjoying the activity itself with behaviors that are instrumental for some other reward, such as money, praise, or grades on a report card (Deci, 1975). The former are referred to as intrinsically motivated and the latter as extrinsically motivated. Intrinsically motivated behaviors are the prototype of self-determined activity; they are of interest to one's intrinsic self (Deci & Ryan, 1991) and are thus freely undertaken. Extrinsically motivated activities, in contrast, are ones that are undertaken as a means to some end—that is, as an instrument for achieving some outcome other than the spontaneous satisfaction that accompanies the activity. Extrinsic outcomes are often administered by others and used to coerce or control—for example, teachers often dispense grades and detention to make students do particular activities. Consequently, early formulations (e.g., Deci,

1975) viewed extrinsically motivated behaviors as non-self-determined and antagonistic to intrinsically motivated (self-determined) behaviors. In later work, my colleagues and I (Ryan & Connell, 1989; Ryan, Connell, & Deci, 1985) proposed that it is possible, through the developmental processes of internalization and integration, for an extrinsic regulatory process to become part of the self and thus to be the basis for self-determined, extrinsically motivated behavior. As such, extrinsically motivated behaviors can be either self-determined or non-self-determined, depending on the extent to which their regulatory processes have been integrated into the self (Deci & Ryan, 1991).

The concept "interest" has often been associated with intrinsically motivated behaviors because people seem to adopt those behaviors out of interest. In fact, several theories of human motivation have referred to people as being *intrinsically motivated* when they are freely doing what interests them (deCharms, 1968; Deci & Ryan, 1985; White, 1959). When so motivated, their behavior is characterized by concentration and engagement; it occurs spontaneously and people become wholly absorbed in it. The purest forms of intrinsic motivation may involve the person's experiencing what Csikszentmihalyi (1975) has referred to as "flow"—a state in which the person is completely immersed in an activity and experiences a flow of awareness. This state can be thought of as a prototype of being interested.

In self-determination theory, interest is also closely linked to intrinsic motivation, though more generally it is linked to all self-determined action. In self-determination theory, interest is conceptualized as the core affect of the self—the affect that relates one's self to activities that provide the type of novelty, challenge, or aesthetic appeal that one desires at that time. Thus, interest is primarily linked to intrinsically motivated activities but can become associated with extrinsically motivated activities to the extent that their regulation has been integrated with one's intrinsic self (Deci & Ryan, 1991). Let me now elaborate.

INTRINSIC MOTIVATION AND INTEREST

From the perspective of self-determination theory, the starting point for an analysis of interest is in the relation between a person and an activity. When a person experiences interest, he or she is engaged in some activity. This could be playing softball, looking at a painting, riding a bicycle, listening to a symphony, or sensing the inner activity of breathing. Typically, activities involve objects—things that are being apprehended or

manipulated—and some theorists (e.g., Krapp & Fink, this volume) use the person–object interaction as the focus of their analysis. In my view, although the object is important, it is considered an aspect of the activity, so it enters the analysis accordingly.

Because interest exists in the relation between a person and an activity, the self-determination analysis is concerned with the match between a person's needs, desires, and capacities, on the one hand, and the affordances of an activity, on the other. More specifically, we are concerned with the needs and desires that are either intrinsic to the self or have become integrated with the self (Deci & Ryan, 1991) and with the match between those needs and the affordances of various activities. Our approach, therefore, maintains that a person is not necessarily *interested* in the activities he or she is motivated to do. Often, for example, the activity is simply instrumental and is not of interest to the person. Only when the needs or desires of the self mesh with the activity will the person experience interest. This point is a very important one because, as I later argue, the quality of one's motivated behavior differs as a function of the extent to which the person is interested in the activity.

Beginning with the definition of interest as an affect that occurs in the interaction between a person and an activity, one can then move to a focus either on the activity or on the person. For example, one can explore the characteristics of activities that tend, on average, to make them interesting to a group of people (e.g., to late elementary school children). This approach, which can be found in the work of various investigators (e.g., Hidi & Baird, 1986), is quite useful for purposes of intervention. By knowing what characteristics of tasks tend to be interesting to children, one can design educational materials that, on average, will be more interesting (and thus more intrinsically motivating) for the children.

Similarly, one can treat interest as a person variable (e.g., Renninger, 1990) and focus on the degree to which a person is interested in a particular activity or class of activities (e.g., mathematics, or school work more generally). This approach is concerned with the person's enduring interests in an activity over an extended period of time (see also Krapp & Fink, this volume), and it allows interest to be treated as an individual difference or dispositional variable. Thus, one could assess the degree to which people are interested in an activity (or class of activities) and use this to predict other variables such as school achievement or classroom adjustment.

Each of these approaches represents a useful arena for research and helps to explicate an aspect of the concept "interest." However, whether one's focus is primarily on the interestingness of activities or on people's tendency to be interested, one must also, at least implicitly, consider the other. To design interesting tasks, one must understand the characteristics of the people who will engage in them; and to assess people's interest, one must do so with respect to activities, however broadly these activities are defined. Furthermore, a thorough analysis of interest requires even more than a consideration of the person and the activity, because a person–activity interaction occurs within a social context, and the context can have a considerable influence on that interaction, and thus on the person's interest.

In this chapter, I focus on the interrelatedness of persons, activities, and contexts, discussing the issues as they apply to students in educational settings. I begin by elaborating the concepts of intrinsic motivation, interest, and self-determination, emphasizing the relation of activities to persons. Subsequently, I review two bodies of research: The first explores the effects of social contexts on people's intrinsic motivation, interest, and self-determination; and the second explores the relation of intrinsic motivation, interest, and self-determination to conceptual understanding, cognitive flexibility, and creativity.

Intrinsic Motivation

Intrinsic motivation has been increasingly recognized over the past two decades as a crucial concept for understanding human motivation. To a large extent, the concept emerged from a realization that the two dominant associationist theories in empirical psychology—Skinnerian operant theory (e.g., Skinner, 1953) and Hullian drive theory (e.g., Hull, 1943)—were not adequate for explaining a variety of behaviors and phenomena that were being observed in experiments with humans and other animals. These observations involved such behaviors as exploring novel spaces (Montgomery, 1954) and manipulating objects (Harlow, 1953) that seemed to have neither a direct nor an indirect relation to reinforcements. Because the concept of intrinsic motivation received initial attention largely in reaction to the two very different reinforcement theories, it was initially formulated and defined in two quite different ways.

In response to Skinner's functional theory of reinforcement, intrinsically motivated behaviors were defined as those that occur in the absence of any operationally separable reinforcement (i.e., in the absence of an extrinsic reward). This view, although it added little to our understanding

of the psychological processes underlying intrinsically motivated behavior, has served well as an "operational" definition of the concept and is the basis for the so-called free-choice measure of intrinsic motivation that has been used by numerous researchers for the past two decades (Deci, 1971).

Alternatively, in response to Hull's drive theory of reinforcement, which stated that all behavior is reducible to physiological drives, intrinsically motivated behaviors have been defined as those that are based in the innate *psychological* needs of the organism (e.g., White, 1959). The two inherent psychological needs most frequently referred to as being related to intrinsic motivation are competence (or effectance) and self-determination (or autonomy), although a third need—the need for relatedness—has also proven useful for a full explication of intrinsic motivation and self-determination (Deci & Ryan, 1991). The view that intrinsic motivation is based in psychological needs was initially articulated by White (1959), although it is traceable to the earlier work of Murray (1938) and Maslow (1943). This approach is extremely important because it elucidates the psychological processes involved in intrinsic motivation, and in so doing it addresses people's basic nature. Furthermore, it provides a basis for predicting what contextual conditions will enhance versus diminish intrinsic motivation—contexts that allow the satisfaction of one's intrinsic needs for competence, self-determination, and relatedness will enhance intrinsic motivation, whereas those that thwart the satisfaction of one or more of these needs will diminish intrinsic motivation.

Although the two approaches to defining intrinsic motivation are quite different, they are complementary in that the first approach describes the organism's actions, whereas the second sheds light on the underlying processes that motivate these actions. The idea that human beings have intrinsic psychological needs suggests that "nonreinforced" activity is motivated by those basic psychological needs. In other words, people's inherent needs to be competent, self-determining, and related motivate them to actualize capacities that allow them to function in a competent and self-determined fashion while maintaining meaningful ties to significant others.

Interest

The concept of "interest" became prominent in discussions and definitions of intrinsic motivation somewhat later than did the ideas of nonreinforcement-related activity and psychological needs. Still, it was at least

implicit in all discussions of intrinsic motivation, for it is hard to talk about "intrinsically motivated" activity without describing people being interested in the activity. Stated differently, the clearest evidence in support of non-reinforcement-derivative behavior is that people (and other animals) persist at activities for no clear reason except that they seem to find the activities interesting.

Because, in self-determination theory, interest is explicated in terms of the interaction between a person and an activity, operating within a social context, I now consider each of the three elements in turn.

The Person. Central to the psychology of a person is the developing self (Deci & Ryan, 1991; Ryan, 1991), which consists of innate capacities, intrinsic psychological needs, and the developmental process of organismic integration through which the person develops. Interest occurs at the moment of a match between these organismic conditions and the affordances of the situation. In other words, one experiences interest when one encounters novel, challenging, or aesthetically pleasing activities or objects in a context that allows satisfaction of the basic psychological needs and thus promotes development.

The *experiential component* of a person's interest is the uniquely recognizable awareness that the person has come to associate with particular physiological activity (James, 1890). Each of us has a personal understanding of what it means, experientially, to be interested. There is a certain quality of attention and a certain sense of delight, for example. The experiential quality of interest has a positive hedonic valence and is related to the feelings of excitement and enjoyment, although there is lack of agreement about whether interest, excitement, and enjoyment are the same or different affective experiences. Izard (1977), for example, considered interest–excitement to be one emotion and enjoyment to be another, and Reeve (1989) has distinguished interest and enjoyment empirically. Although I think interest, excitement, and enjoyment are all slightly different experiences, I often look to their convergence as a means of assessing intrinsic motivation. When a person reports interest, excitement, and enjoyment with respect to an activity, one can be reasonably sure that the person is intrinsically motivated for that activity.

Interest also has a *dispositional component*. Through experiencing interest when relating to particular activities, a person develops an interest for, or an enduring desire to interact with, those activities. Such interests can be narrowly defined (e.g., playing tennis) or more broadly defined (e.g., engaging in athletics) and once identified can be assessed and used to

predict qualities or quantities of behavior and development. Thus, for example, if one were to assess a child's interest in reading, one could use that to predict the child's intrinsically motivated activity (and achievement) concerning reading. In other words, one could predict the extent to which the child would engage in reading without being prodded and without needing an extrinsic incentive. The more broadly one defines dispositional interest, the more broad can be the outcomes one predicts. In the next section, I address how these enduring, dispositional interests develop.

The Activity. The referent of a person's interest, whether one is dealing with an immediate experience or a dispositional tendency, is an activity that typically includes some object. These referents are activities that, at a particular time (or perhaps ongoingly), have an optimal relation to the condition of the organism—that is, to one's desires and inclinations, if biological urges do not interfere. When that relation is optimal, one experiences interest and begins to develop a dispositional preference for that activity or class of activities.

Considerable research has focused on the characteristics of tasks (and objects) that tend to make them interesting to people. Two closely related characteristics seem to be central: *optimal challenge* and *novelty*. Activities or ideas that people find interesting are usually optimally discrepant from what they know or can do. These activities require that people "stretch" their capacities or expand their cognitive structures. Interest is what people are likely to feel when they encounter such optimally challenging tasks, and those are the tasks people freely seek. For example, people often speak of preferring to play squash with others who are just a little better than they are—that is, who provide a challenge. (Of course, if people's primary motivation is to win rather than to enjoy the game, they may prefer a poor player, but then interest is not central to those interactions.)

Danner and Lonky (1981) did a study in which children's reasoning capacities were preassessed. The researchers then made a variety of activities available to the children, using the type of "interest center" structure often available in "open classrooms." The results indicated that when the children were free to select their own activities they tended to go to those that were slightly beyond their existing capacities. In a complementary study, Harter (1978) found that children expressed greatest pleasure (for example, by smiling) when they worked on tasks that were moderately difficult (i.e., optimally challenging) for them.

Closely related to the idea of optimal challenge are those of novelty (Berlyne, 1971) and optimal discrepancy between an input and a cognitive structure (Hunt, 1965). The concepts of novelty and discrepancy are slightly different, and each differs slightly from optimal challenge, because each comes from a different theoretical tradition. Still, they share the common idea that people tend to freely seek and be interested in those activities or inputs that are optimally challenging, in other words, that are not fully mastered but are not so discrepant as to be frustrating.

Of course, not all challenges or novel inputs interest an individual, but where there is interest, there is likely to be optimal challenge or novelty. The additional factor that is necessary to explain what inputs are interesting to people can be called *preferences*. In essence, these are dispositional interests. People have preferences among optimally challenging activities (or objects) because of the personal relevance or aesthetic appeal of the activities or objects. In general, these preferences develop as a function of three critical factors: innate capacities, environmental affordance, and interpersonal contexts.

First, people tend to prefer those activities for which they have some innate capabilities, and the stronger their capabilities, the more likely they are to find the activities interesting. Researchers have often found, for example, that perceived competence is correlated with interest and intrinsic motivation (Grolnick, Ryan, & Deci, in press; Ryan & Grolnick, 1986), and it is sometimes said that geniuses "have to do what they do" in the sense that their superior ability is so compelling that it dominates their interest. I am here making two related points. One is that people tend to have stronger preferences (or dispositional interests) for activities at which they are more competent or have greater potential. The other is that, regardless of people's level of proficiency, they are more interested in activities that provide optimal challenge. Beginners and accomplished performers alike are more interested in optimally challenging activities, though of course the activities that are optimally challenging for accomplished performers are much more difficult than those that are optimally challenging for beginners.

Second, preferences (or enduring interests) are also influenced by the activities available in people's environments. Although the tendency to engage in challenges and develop competencies is innate and is influenced by inherent capacities, the specific activities toward which one directs one's energies are affected by the affordances that are available. A child who lives on a small farm on the side of an Alp, surrounded by snow, mountain goats, and wild flowers, will tend to develop different

preferences from those of a child who lives in the Galapagos, surrounded by ocean, turtles, and sunshine. Whereas the former might be interested in farming, the latter may develop a preference for fishing. The environmental factors are *not* determinative, and either young person could go off to the city to become a physician, but the environments do influence preferences because they constitute the challenges and gratifications that are available, and people are more likely to develop preferences for optimal challenges that are available to them than for those that are not.

Third, preferences are influenced by social contexts. Later in the chapter I will review an extensive body of research showing how social contexts influence intrinsic motivation and enduring interests. For now, let me just say that when people engage in activities within a social context that allows satisfaction of their fundamental psychological needs for competence, autonomy, and relatedness, they will be likely to maintain or develop enduring interests in those activities, whereas when they engage in activities within a social context that thwarts the satisfaction of the three psychological needs, they will lose or fail to develop enduring interests.

INTEREST AND EXTRINSIC MOTIVATION: SELF-DETERMINATION

Interest organizes some of people's attention and activity. When they feel free to do so, their attention is directed toward activities or objects that interest them. They turn to things that satisfy their intrinsic needs and to tasks for which they have developed preferences. And when people experience interest, the energy necessary for action is readily available. This unconflicted activity is what we refer to as being intrinsically motivated and is what we have been discussing so far. When people are thus motivated, the "rewards" are the spontaneous affective/cognitive experiences that accompany their behavior.

Although interest plays a central role in intrinsic motivation, interest is not central to all motivated behavior. Often, for example, people engage in activities not because the activities are themselves interesting, but rather because they are *instrumental* for some desired outcome that is quite separate from the activity itself. Such outcomes can include status, approval, money, and a host of others. In these cases, the term interest does not properly describe one's relation to the activity. One does not do the activity because one finds it interesting; one does it because it is instrumental to some other outcome. If I were to play tennis merely as a way to relate to a friend who likes tennis, I would not be playing the game

because it interests me. Instead, I would be doing it because it gives me an opportunity to relate to my friend. If my friend preferred ice skating, I would probably go ice skating. Of course one could say that I am interested in relating to my friend, that I find my friend interesting. That may well be true, but it changes the referent activity. In this example the referent activity is playing tennis, and the point is that this activity is not intrinsically motivated, so the term interest is not appropriate for describing my relation to tennis.

Activities that are not themselves interesting but are done because they are instrumental for some desired outcome are said to be *extrinsically motivated*. The relation between extrinsic motivation and intrinsic motivation has received considerable attention in the past 25 years. For example, operant theorists have claimed that there is no such thing as intrinsic motivation (Reiss & Sushinsky, 1975), and instrumentality theorists have asserted that extrinsic and intrinsic motivation are additive to yield total motivation (Porter & Lawler, 1968). However, an abundance of research has now indicated that extrinsic and intrinsic motivation can be negatively interactive, with extrinsic motivation sometimes undermining intrinsic motivation because of diminishing what I have called a sense of self-determination (e.g., Deci, 1975). This research finding, which has been replicated many times, has led numerous writers and theorists to pit intrinsic and extrinsic motivation against each other, viewing them as antagonistic. This, however, is an oversimplified and inaccurate account of the relation between the two types of motivation.

Whereas many studies have shown that extrinsic rewards tend to decrease intrinsic motivation within some social contexts (Deci, 1971), other studies have found that the same rewards may enhance intrinsic motivation in other contexts (Ryan, Mims, & Koestner, 1983). Although I elaborate on this point in a later section on social contexts, I mention it here to make clear that the relation between extrinsic and intrinsic motivation is complex both because the effects of external incentives depend on the social context within which they are administered and because a person's extrinsic motivation has been found to have many forms (Ryan & Connell, 1989). Notably, research has indicated that some activities undertaken because of extrinsic prods, pressures, or inducements can leave people feeling they have no sense of freedom or self-determination, whereas other instrumental or extrinsically motivated activities, such as playing tennis to be with a friend, may allow one to feel quite free and self-determining. In recent work, my colleagues and I (Deci & Ryan, 1985; Ryan & Connell, 1989; Ryan, Connell, & Deci, 1985) have

focused on the issue of how extrinsically motivated activities—ones that a person undertakes not because they are intrinsically interesting to him or her but rather because they are instrumental to a desired outcome—can vary in the extent to which they are endorsed by or emanate from one's sense of self and are thus self-determined.

Our analysis of extrinsic motivation revolves around the concept of *internalization*, which is the process through which external regulation is actively transformed into internal regulation (Schafer, 1968). Consider the case of classroom learning. Learning, as an activity, can certainly be interesting, as is so evident in young children, and we all know what it is like to be interested in learning something. The problem faced by educators and parents alike, however, is that many of the classroom activities they believe to be important for children's learning are not really interesting to children. Thus, it is up to the socializing adults to encourage children to undertake behaviors that the children would not do spontaneously (i.e., that are not intrinsically motivating). The ideal outcome of such adult-child socializing interactions is for the child to take responsibility for learning the uninteresting material, in other words, for the child to internalize the regulation for that activity. The adult may supply the initial extrinsic impetus for the action, but the goal is for the child to become self-regulating with respect to it.

By internalizing the value of an activity and the process of regulating it, a person transforms motivation by external factors into motivation by internal factors. However, there are two distinctions that are important to make at this point. First, this "now internal" motivation is still referred to as *extrinsic* motivation because there is still a goal separate from the interest and enjoyment of the activity itself. For example, if learning the multiplication tables is considered important for being able to do more advanced math and other such activities, a child may accept responsibility for learning them even though the child does not find the activity at all interesting. The child would have internalized the regulation of this activity (and thus the motivation would be internal to the child), but the activity is extrinsically motivated because it is still an instrumental one that is done now because it is instrumental to being able to do more advanced mathematics in the future. The second important point is that the concepts of interest and importance have somewhat different motivational functions. We have drawn a clear link between interest and intrinsic motivation emphasizing that an activity is intrinsically motivated if one's primary reason for doing it is the spontaneous interest and enjoyment one experiences from doing it. With extrinsic motivation, however, the

concept of "importance" is more germane. One undertakes the activity primarily because it is instrumental or important for some extrinsic goal, even a goal that the person values (i.e., for which the value has been internalized) such as being able to do more advanced mathematics.

The self-determination theory formulation of internalization has differentiated the concept of extrinsic motivation even further by describing different forms of internalized extrinsic motivation (Deci & Ryan, 1985; Ryan & Connell, 1989). *Introjected* regulatory processes are processes that have been taken in or internalized by a person but never accepted as his or her own. These may take the form of controlling prescriptions, often formulated as "shoulds" or "oughts," and they typically have immediate consequences like self-administered approval or disapproval. To do something because you have learned that you should and will feel guilty if you do not is an example of introjected regulation. Gradually, however, a person may come to *identify* with the importance of the activity for him or herself in which case the regulation will have been more fully accepted by the person as his or her own—there will be less conflict and greater integration with respect to the regulation of that activity. Finally, the person may, as the developmental process continues, *integrate* that regulatory process with others so as to form greater coherence of self. Using the spatial metaphor, one would say that the regulation gradually becomes integrated into the self and thus is the basis for self-determined extrinsic motivation.

In this conceptualization, then, there are four types of extrinsically motivated activity—external, introjected, identified, and integrated—here ordered to reflect increasing degrees of self-determination. Accordingly, this view suggests that a person can gradually become self-determined with respect to the activity even though he or she may not be very interested in it. It is probable that, as the regulation becomes integrated, the person will experience greater interest in doing it, though I believe that the concept "importance" continues to be more central than interest even to self-determined extrinsic motivation.

A further proposition of self-determination theory is that the process of internalization tends to occur naturally—that is, people will be intrinsically motivated to accept values and regulatory processes—if the values are not inconsistent with their basic nature and the social context does not interfere with the process (Deci & Ryan, 1985, 1991). Out of the need for relatedness, people are motivated to find a satisfying place in the social milieu. Doing this requires sharing at least some of the values and practices of the others in that milieu. Thus, the internalization process

begins because of a person's need for relatedness to others. People internalize values and behaviors that are endorsed by the social world because they want to be accepted by that world.

Internalizing a regulation merely to be accepted by others is likely to take the form of introjected regulation. The identification and integration of the regulation is not necessary for people to feel related to others, but it is necessary for them to feel self-determined. Thus, for the internalization process to be effective and to result in integrated self-regulation, it must be motivated by a combination of the psychological needs for relatedness and self-determination (autonomy).

Ryan and Connell (1989) recently developed a scale to assess the degree to which the regulation of school work has been internalized by middle-childhood students. They reported that the more autonomous or self-determined the students were in regulating their school-related behavior, the more likely they were to enjoy school, the less anxious they were about school, and the more proactive they were in coping with school problems.

To summarize, according to self-determination theory, internalization of the regulation for uninteresting behaviors is a natural, intrinsically motivated process. When the process functions effectively, children can become more self-determined in the regulation of extrinsically motivated behavior. As they become more self-determined, it is probable that they will be more interested in the activity, though I have emphasized that the importance of the activity rather than its interestingness is more central to extrinsic motivation (even internalized forms of it), whereas interest is more central to intrinsic motivation. As we see next, both intrinsic motivation and internalization are significantly affected by the social context within which the children are functioning.

SOCIAL CONTEXTS

Earlier I said that there are three fundamental psychological needs that are intrinsic to the self—the needs for competence, autonomy, and relatedness. Social contexts that allow the satisfaction of these three basic needs will promote intrinsic motivation, internalization, and interest, whereas those that thwart one or more of these basic needs will inhibit or undermine these intrinsic processes.

Dozens of studies in psychology laboratories, classrooms, and homes have focused on factors that enhance (versus diminish) intrinsic

motivation and interest by facilitating versus forestalling the experience of competence, self-determination, and relatedness.

Numerous studies have shown that competence-promoting information enhances interest (e.g., Boggiano & Ruble, 1979; Deci, 1971; Harackiewicz, 1979; Ryan, 1982), whereas information that signifies or ensures incompetence diminishes interest (e.g., Deci & Cascio, 1972; Vallerand & Reid, 1984). Studies using path analytic procedures (e.g., Harackiewicz, Abrahams, & Wageman, 1987) have further confirmed that competence-promoting feedback and structure are important for enhancing people's sense of competence and in turn their intrinsic motivation and interest, whereas competence-diminishing feedback and structure undermine intrinsic motivation and interest. However, studies have also shown that boosting perceived competence is not enough to maintain or enhance intrinsic motivation and interest; the person must also experience a sense of personal causation or self-determination with respect to his or her competence (Fisher, 1978; Ryan, 1982).

A tremendous amount of empirical work has focused on the distinction between contexts that support autonomy, thus facilitating intrinsic motivation and interest, and those that control behavior, thus undermining intrinsic motivation and interest by diminishing one's sense of self-determination. Early studies on this topic were laboratory experiments that explored the effects of specific external events such as the promise of a reward or the imposition of a deadline. The typical paradigm involved two groups of subjects working on the same activity under the same condition, except that one group would receive the experimental manipulation (e.g., would receive a monetary reward) and the other group would not. Subsequently, intrinsic motivation for the target task were assessed in either or both of two ways: behaviorally, by calculating the amount of time subjects spent on the task during a free-choice period when other attractive activities were available; and attitudinally, with self-reports of interest/ enjoyment for the task. Means for the groups were then compared, and results used to demonstrate that monetary rewards (Deci, 1971), good player awards (Lepper, Greene, & Nisbett, 1973), avoidance of punishment (Deci & Cascio, 1972), deadlines (Amabile, DeJong, & Lepper, 1976), imposed goals (Mossholder, 1980), and competition (Deci, Betley, Kahle, Abrams, & Porac, 1981) all tended, on average, to undermine intrinsic motivation and interest, thus suggesting that they were experienced by subjects as controlling. On the other hand, providing people with choices (Zuckerman, Porac, Lathin, Smith, & Deci, 1978) and acknowledging their perspectives or feelings (Koestner, Ryan, Bernieri,

& Holt, 1984) were found to enhance intrinsic motivation and interest, thus suggesting that they were experienced by subjects as supportive of autonomy.

Studies in public school classrooms (e.g., Deci, Schwartz, Sheinman, & Ryan, 1981) indicated that, when the general classroom contexts tended to be autonomy-supportive rather than controlling, the students displayed higher intrinsic motivation and more positive concomitants. For example, in one study of school classrooms, we (Deci, Nezlek, & Sheinman, 1981) focused on the effects of teaching styles on student motivation and self-image. In 35 fourth-, fifth-, and sixth-grade classes, we assessed whether the teachers tended to support their students' autonomy or to control their students' behavior, and we assessed the children's level of intrinsic motivation, as indicated by their curiosity and preference for challenge. We also measured their perceived competence and feelings of self-worth. Children in the classrooms of control-oriented teachers showed less intrinsic motivation, perceived themselves as less competent, and felt less good about themselves than students of autonomy-supportive teachers. This and other studies reported in this section focused only on interest, intrinsic motivation, and affective correlates such as self-esteem. In the final section of this chapter, I report studies that link interest, intrinsic motivation, and self-determination to enhanced learning.

A series of laboratory experiments by Ryan and his colleagues (e.g., Ryan, 1982; Ryan, Mims, & Koestner, 1983) explored the effects of specific events, such as limits or rewards, when they were administered within different social climates. These studies showed that, although particular events (e.g., a monetary reward) tend on average to be experienced in specifiable ways (i.e., as either autonomy-supportive or controlling) and thus have the predictable effects of enhancing or diminishing intrinsic motivation and interest, the context within which the events are administered can substantially influence their effects. For example, on average, rewards have been found to be experienced as controlling and to undermine intrinsic motivation (Deci, 1971, 1972). However, Ryan et al. (1983) showed that rewards could either enhance or undermine intrinsic motivation depending on whether the context within which they were administered was autonomy supportive or controlling. Autonomy-supportive contexts do not pressure one to act in particular ways, and they use rewards simply to convey information and/or appreciation. Controlling contexts, on the other hand, pressure people to behave, think, or feel in particular ways.

In another study from this series (Koestner, Ryan, Bernieri, & Holt, 1984), two groups of children were asked to paint pictures, and limits were set on the way they worked. However, the way the limits were communicated differed for the two groups. The children in one group were told how the task should be done, and they were told that they should be good boys (or girls) and do it the right way. The other children were told about the task and the limits, and their responses were acknowledged, but the experimenter did not use controlling words or phrases such as "should" or "be a good boy/girl." Thus, for the first group, the experimenter was being controlling by using language that tended to pressure the children, whereas for the second group the experimenter was being much more supportive of the children's initiative and autonomy by not using the controlling language and acknowledging the children's perspective. The results of the experiment showed that the children in the first group, who heard the controlling language, lost intrinsic motivation because they were performing to comply with the experimenter's demands. On the other hand, the children in the second group remained intrinsically motivated; they performed out of interest and enjoyment.

To summarize, the presence of specific events such as positive feedback or limits can influence the way a target person experiences the social context (e.g., rewards can make the context more controlling). However, interpersonal processes, as affected by factors such as the orientation of authorities in that context—authorities such as teachers or parents—are also important determinants of the quality of the context. Interpersonal aspects of the context can even change the way specific events (such as rewards) tend to be experienced. Simply stated, specific events and general interpersonal processes interact to determine the nature of the social context and thus to affect the motivation of people in that context. When the context is experienced as being controlling—as pressuring people to think, feel, or behave in some specific way—their interest will tend to be undermined and they will be motivated to maximize their extrinsic outcomes. On the other hand, when people experience the context as supporting their autonomy—as encouraging their initiation and choice—they will maintain their interest and intrinsic motivation.

The final contextual nutriment for interest is the kind of genuine interpersonal involvement that satisfies a person's need for relatedness. For children, of course, it is the relationship with parents and teachers—that is, with their significant adults—that is most important for their maintaining interest in school and developing appropriate social skills (e.g., Connell, in press; Ryan & Lynch, 1989). When they are denied the

relatedness with these adults, they tend to lose interest in the activities that the adults endorse.

In one laboratory experiment with young children, for example, Anderson, Manoogian, and Reznick (1976) found that denying children desired involvement with adults led the children to lose intrinsic motivation. Most other studies exploring this issue have been done in field settings and have considered both autonomy support and interpersonal involvement by significant adults. Grolnick, Ryan, and Deci (in press) assessed third- through sixth-grade students' perceptions of their parents' involvement and autonomy support regarding homework and other school-related activities. They found that the combination of these two variables predicted what the researchers called the students' inner resources for learning; namely, their perceived control (Connell, 1985), perceived competence (Harter, 1982), and perceived autonomy (Ryan & Connell, 1989), all of which correlate with intrinsic motivation. In another study, Grolnick and Ryan (1989) used structured interviews with parents to assess their autonomy support and involvement with their children and found these variables to be related to intrinsic motivation and other important variables such as self-esteem.

Most of the studies of social-contextual influences thus far discussed used intrinsic motivation or interest as the dependent measure, and the results confirm that the convergence of autonomy support, competence-promoting feedback, and interpersonal involvement represents the optimal condition for intrinsic motivation.

Some of the aforementioned laboratory and field studies, as well as additional ones, have also explored the effects of social contexts on the internalization of regulations. For example, in the Grolnick and Ryan (1989) study, multiple-regression analysis showed that parental autonomy support was a significant predictor of internalization and that involvement supplemented that effect.

In a laboratory experiment, Deci, Eghrari, Patrick, and Leone (1991) had subjects work on a boring activity, though the activity was one that could be used to improve concentration. They found that three factors were important for promoting internalization, as assessed by subsequent self-regulation of the activity. They were: providing a rationale for doing the dull task (viz., it can improve concentration); minimizing the use of pressure and providing a sense of choice about doing the activity; and acknowledging that the subjects might find the activity uninteresting.

People's willingness to participate in uninteresting activities depends on their experiencing the activities as having personal importance or instrumental value to them. If people understand the importance of the activities, social contexts that are characterized by involvement and autonomy support will tend to foster the internalization of regulations for these uninteresting though important activities. And through internalization and integration, the activities may gradually become more interesting for the person.

PERSONS, ACTIVITIES, CONTEXTS: A SUMMARY

Thus far, I have defined interest as the core affect of self, suggesting that it occurs when there is an ideal match between a person's organismic condition and the environmental affordances. I linked interest directly to intrinsic motivation, and I also suggested that if the extrinsic regulation of an activity has been fully integrated with the intrinsic self, the person is likely to experience greater interest for the activity than if its regulation has not been fully integrated.

A particular activity will be more or less interesting to a person as a function of the degree to which it is optimally challenging for the person and the degree to which he or she has developed a preference (i.e., a dispositional interest) for the activity. The development of preferences for a particular activity is explained by the mix of innate competencies and potentials, the ongoing availability of the activity as an affordance, and the quality of the social context within which one repeatedly encounters that activity.

Social contexts play a crucial role in the immediate experience of interest (and intrinsic motivation), in the development of enduring preferences (or dispositional interests), and in the internalization and integration of extrinsic regulatory processes. Contexts that are autonomy-supportive, that provide optimal challenges and informational feedback, and within which one feels securely related to significant others will promote the experience of interest, the development of enduring interests, and the integration of regulations.

Accordingly, to facilitate a person's interest, another person—such as a parent or teacher—must take account of the person's dispositions and the available affordances, so as to create an optimal person-activity match. When there is a good match, the person will be intrinsically motivated; when there is not, the other person must provide optimal structures that

can be internalized. Finally, throughout all this, the other person needs to relate genuinely to the target person and support his or her autonomy.

Having focused primarily on the characteristics and conditions that promote interest and self-determined motivation, I shall now turn to a consideration of the concomitants and consequences of interest and self-determination, particularly in the educational domain.

EDUCATIONAL OUTCOMES

The enterprise of schooling serves a variety of cultural functions (Ryan & Stiller, in press) aimed at preparing children to become productive members of society. Although people disagree about the outcomes that should represent the most important goals of the schooling endeavor, there are two that I believe to be by far the most important. One is that students gain an integrated understanding of the meaning and importance of concepts. This is often referred to as "deep learning" but can be simply stated as learning to think. The other is that students gain a strong sense of personal worth and self-understanding as well as a meaningful accommodation to the social world—an accommodation in which they not only respect the social world and are influenced by it but maintain interest, curiosity, and personal commitment.

These learning and adjustment outcomes are all too frequently confused with their more superficial counterparts. Scores on standardized tests and grades for courses are the bottom line—the currency—of education, yet there is no indication that these reflect the type of conceptual understanding or creative problem-solving that I refer to as deep learning. Indeed, it is quite possible that scores and grades are primarily reflective of a more superficial kind of learning—learning that is geared toward memorizing the kinds of facts that one might be required to reproduce on an exam. Similarly, compliance and conformity to norms are often used to signify adjustment, though there is no indication that these signify a sense of personal worth or self-understanding.

In this section, I review research that relates intrinsic motivation and interest to learning and adjustment. Some of the studies involve assessment of these motivational variables. Others predict achievement and adjustment from social context variables that have been found either to increase or to decrease intrinsic motivation and interest, thus establishing a network of relations among variables.

Several investigations by the Motivation Research Group at the University of Rochester have considered the relation among external pressures, intrinsic motivation, and educational outcomes. In one experiment, Benware and Deci (1984) asked college students to read and learn some complex text material. Half the subjects were told that they would be tested on what they learned, thus approximating the typical controlling, extrinsic conditions of many classrooms. The other subjects were told that they would have the opportunity to put their learning to use by teaching it to other students. We thought that this learning context would facilitate intrinsic motivation because the learning would have some real use—it would be a more meaningful condition for learning. The subjects all took the text home and had several days to learn it. They were asked to keep track of how long they spent reading or studying it before returning to the laboratory. When subjects returned, they were all given the same exam, which included questions to assess both rote memorization of facts and conceptual understanding of the material.

They were also given a questionnaire on which they reported how interesting they found the material and how much they enjoyed learning it. Results of the experiment indicated that, although the rote memorization of the two groups was identical, those subjects who learned in order to teach showed significantly greater conceptual understanding than those who learned in order to take an examination. When we analyzed the time that the subjects spent learning the material, there was no difference between the groups. There was, however, an important difference between the groups on another variable. Subjects who learned the material to teach it found it significantly more interesting and enjoyable than those who learned it simply to be tested. Furthermore, the degree of interest/enjoyment that subjects expressed was positively correlated with their conceptual understanding. In sum, then, this study suggests that when people are motivated by control or pressure (here manipulated by telling subjects they would be tested), intrinsic motivation and interest that students have for learning tends to be undermined. This, in turn, impairs their conceptual understanding of the material. On the other hand, when students have a meaningful reason for learning and do not feel pressured, they tend to find the material more interesting and learn it more fully.

Another experiment, by Grolnick and Ryan (1987), found complementary results with fifth-grade students. Three groups of students were given text material to read in individual sessions outside their normal classroom. Children in the first group were asked to *learn* the material because they would be tested on it and given a grade. Children in the

second group were also asked to *learn* the material, but there was no mention of a test. For the children in the third group there was no mention of learning; they were simply asked to *read* the passage so they could report how interesting they found it. Thus, the first two groups were "directed" to learn, whereas the learning of the third group was nondirected or incidental. However, only the first group learned under controlling conditions, so the last two groups were both expected to be more interested in the material.

After each child read the material, he or she was examined on it, both for rote memorization and conceptual understanding. Each child was also given a questionnaire assessing his or her interest in the passages. Furthermore, 1 week later, a different experimenter went into the children's classrooms and group-administered a second exam and interest questionnaire. This had been entirely unexpected by the children, so it provided an opportunity to assess longer-term retention of material under conditions where none of the children had any specific reason to remember the material.

Results of the experiment showed that subjects in the "test" condition (which was believed to be the most controlling) reported significantly lower interest and displayed significantly less conceptual understanding than subjects in the two noncontrolling conditions. On the other hand, subjects in the test condition evidenced as much rote memorization as subjects in the directed learning condition without a test, and subjects in both directed learning conditions showed more rote memorization than those in the nondirected learning group. Finally, however, subjects in the test condition reported feeling significantly more pressured and evidenced significantly greater memory deterioration in the week following learning than did subjects in the other two conditions. It seems, then, that the standard practices of pressuring students to learn through the use of techniques like tests may result in poor affective and conceptual outcomes. Even the advantage that this method may have for fostering rote memorization appears to be very short term, as it was gone within a week.

Other studies of the antecedents of educational outcomes have used questionnaires to assess children's perceptions of the context, their intrinsic motivation for learning, and their self-perceptions (e.g., perceived competence). The relation of these to school achievement as assessed by grades and by standardized achievement was then calculated. In one such study, Grolnick, Ryan, and Deci (in press) used a questionnaire to assess children's perceptions of their home contexts—whether their parents were involved with them and supportive of their autonomy.

Also assessed were three variables that index how children feel about themselves in the school context, namely perceived control, perceived competence, and perceived autonomy in the academic domain. Using structural equation modeling, we found that the three self-perception variables (which are all correlated with intrinsic motivation) were positively predicted by the children's perceptions of their parents' autonomy support and involvement and, further, that these self-perception variables positively predicted their achievement in school.

In another study, Deci, Hodges, Pierson, and Tomassone (1990) found that perceived autonomy and perceived competence also predicted the standardized achievement scores of students with learning disabilities and emotional handicaps.

Creative and cognitive flexibility

There are two other sets of experiments that are directly relevant to our understanding of educational outcomes. Both sets use experimental methods similar to those that explored the effects of contextual factors on intrinsic motivation, though in one set the dependent variables were related to creativity and in the second to cognitive flexibility. The expectation was that intrinsic motivation would facilitate both creativity and flexibility of thought, so the studies explored the effects of contextual factors that had been repeatedly shown to undermine intrinsic motivation to see whether they would also decrease creativity or cognitive flexibility.

Amabile (1983) developed a consensual assessment method for measuring the creativity of artistic projects (e.g., collages and paintings) produced by subjects in her experiments. Using this procedure, she found that when subjects produced an artistic work in order to get a reward, to try to win a competition, or to try to be rated well by an evaluator, their works were judged to be less creative (using the consensual assessment method) than those of comparable subjects who did not expect a reward, a competition, or an evaluation. The same controlling factors that decrease intrinsic motivation also dampened creativity. Parallel results were also found in the "cognitive-flexibility" experiments. For example, subjects who were given financial rewards for solving problems had a harder time breaking mental set and solving subsequent problems than comparable subjects who had not been offered the reward (McGraw & McCullers, 1979).

It appears from all this research that children's interest, intrinsic motivation, and self-determination with respect to school-related activities

lead to optimal educational outcomes. In other words, these motivationally relevant, internal states lead to enhanced conceptual understanding and more positive affective experiences. Furthermore, interest, intrinsic motivation, and self-determination have been reliably shown to be affected primarily by the autonomy support and involvement of teachers and parents. Other research (Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982) has shown that a strong emphasis on performance standards leads teachers to be less autonomy-supportive. Thus, it seems incumbent upon those of us who are in the role of teacher or parent to create the social conditions that will be experienced by our children and students as encouraging them to follow their interests and to initiate their own behavior—in short, to be responsive to their own inner being.

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4

The Selective Persistence of Interest

Manfred Prenzel
University of Munich, FRG

Maria works as a teacher and takes courses in education in her free time. She has decided to take an introductory course in word processing and programming in BASIC. She believes that being able to use a computer will aid her in both her work and her studies. But this is not the main reason for Maria's decision. Something about computers just grabs her. She sees the computer as a mental challenge. All the students in the course, including Maria, have the opportunity to use a computer at the school. They can work on it as often and as long as they wish. At first, Maria took advantage of this opportunity in order to get some individual practice on the sample programs used in the course. Before long, she began working on a program of her own, one designed to calculate a person's ideal weight. On 12 separate occasions, Maria voluntarily went to the computer lab to develop and improve a program that gave personal feedback about changes in weight. While programming, Maria ran into a number of problems that prompted her to consult some of the literature about BASIC.

Having completed and polished up this program to her satisfaction, Maria tackled an even more complicated programming project—a program to give “tailor-made” feedback to her students about their mistakes and improvement in math drills. In the course of several more visits to the computer lab, Maria developed a first version of her program and did a test run using a math quiz. Then she modified and revised the program until it worked smoothly.