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TOWARD A HIERARCHICAL MODEL OF INTRINSIC AND EXTRINSIC MOTIVATION

Robert J. Vallerand

I. Introduction

Over the years, researchers have come to identify two classes of motivated behavior. The first deals with behavior performed for itself, in order to experience pleasure and satisfaction inherent in the activity, and has been called intrinsic motivation. The second, which involves performing behavior in order to achieve some separable goal, such as receiving rewards or avoiding punishment, has been termed extrinsic motivation (Deci & Ryan, 1980, 1985a). At first, theorists posited that the two types of motivation had an additive relationship (e.g., Porter & Lawler, 1968). That is, that the two types of motivations combined in leading to the highest level of motivation. However, in the first research to examine intrinsic and extrinsic motivation in human subjects, Deci (1971) showed that leading individuals to engage in an interesting activity in order to receive a monetary reward (and thus out of extrinsic motivation) led to a decrease of subsequent intrinsic motivation in the activity. In Deci's terms, intrinsic motivation was undermined by the controlling nature of the reward.

The intrinsic–extrinsic motivation distinction has been explored in over 800 publications to date. Such research can be grouped in at least three major categories. The first category deals with studies that have been conducted on the immediate effects of various situational variables (e.g., rewards, feedback, constraints, deadlines, etc.) on intrinsic motivation. The Deci (1971) studies on the effects of rewards on intrinsic motivation are exemplary of such research. Most of these studies have been conducted in the laboratory, although there have been exceptions (e.g., Fisher, 1978).

The second set of studies has focused on the determinants and outcomes associated with the more or less generalized intrinsic and extrinsic motiva-

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tion toward specific life contexts, such as education, leisure and sports, interpersonal relationships, religion, and others. Such research has been typically conducted in field settings. For instance, it has been found that controlling teachers instill an extrinsic motivation toward school in students early in the year and that such an extrinsic motivational orientation is maintained throughout the school year (e.g., Deci, Nezlek, & Sheinman, 1981; Deci, Schwartz, Sheinman, & Ryan, 1981). More recently, researchers (e.g., Deci & Ryan, 1985a; Vallerand, Blais, Brière, & Pelletier, 1989) have studied the concept of amotivation, or lack of motivation, in life contexts. For instance, interacting on a regular basis with a supervisor who leads one to feel incompetent has been found to facilitate amotivation toward work (e..g, Blais, Brière, Lachance, Riddle, & Vallerand, 1993).

Finally, a last line of research has assessed the relationship between intrinsic and extrinsic motivation as a global motivational orientation devoid from ramifications to specific life contexts (i.e., at the personality level) and various psychological correlates. For instance, Deci and Ryan (1985b) have developed a scale, the General Causality Orientations Scale, assessing global orientations toward autonomy (i.e., being oriented toward behaving out of pleasure and choice), control (being oriented toward behaving because of controls and extrinsic rewards), and impersonality (lacking intentionality and being oriented toward signs of incompetence). These authors showed that correlations between the autonomy orientation and self-actualization, self-esteem, and ego development were positive, whereas those involving the control and impersonal subscales were zero or negative (especially negative for the impersonal subscale).

The above cursory review underscores the diversity of the intrinsic–extrinsic motivation research conducted to date. Although there have been important theoretical contributions from several authors (Csikszentmihalyi & Nakamura, 1989; Deci & Ryan, 1985a; Harter, 1978; Lepper & Greene, 1978a), no theory so far has integrated the various research perspectives described above. For instance, Csikszentmihalyi has assessed the effects of situational (Csikszentmihalyi & LeFevre, 1989) and personality factors (Wong & Csikszentmihalyi, 1991) on immediate (or situational) intrinsic motivation, without considering motivation toward specific life contexts. Lepper has mainly assessed the effects of situational factors (Lepper, Greene, & Nisbett, 1973) and cognitive sets (Lepper & Hodell, 1989) on situational intrinsic motivation and learning. Motivation at the life context and personality levels has not been integrated in his research. Finally, Deci and Ryan have conducted the most comprehensive work in this area. They have mainly assessed the effects of (a) situational factors on situational intrinsic motivation in laboratory settings (e.g., Deci, 1971; Ryan, 1982), (b) contextual factors on motivation toward certain life contexts, especially education (Deci et al., 1981; Ryan & Grolnick, 1986), and (c) they have started to assess the relationship between personality orientations and various other psychological constructs (Deci & Ryan, 1985b). Although Deci and Ryan have discussed how the three levels of motivation—that is the global (or personality), life context (or domain), and situational (or state) levels—are theoretically related, they have not specified a formal integrated model of the relations among these three levels of motivation.

Over the past few years, we have developed in our laboratory a theoretical model that seeks to realize such an integration. The model takes into consideration the variety of ways motivation is represented in the individual, how these various representations of motivation are related, as well as the determinants and consequences of these motivational representations. The purpose of the present chapter is to outline this general model, called the Hierarchical Model of Intrinsic and Extrinsic Motivation (Vallerand, 1995, 1996a), that we believe serves to provide a framework for organizing and understanding the basic mechanisms underlying intrinsic and extrinsic motivational processes. In addition to providing an integration of the current knowledge in the area, the Hierarchical model also leads to new perspectives on the study of intrinsic and extrinsic motivational processes. The rest of this chapter is divided into nine sections. The next section (section II) presents an overview of the model. The following five sections present each of the five postulates that make up the Hierarchical Model of Intrinsic and Extrinsic Motivation. In each section, we review the evidence regarding the validity of the model. Such evidence comes from studies conducted by other researchers as well as research from our own laboratory. In section VIII we review additional evidence from various studies that provide an integrative test of several postulates of the model. In section IX, we tackle unresolved issues related to the model. The last section presents final thoughts on the model.

II. Overview of the Model

The Hierarchical Model of Intrinsic and Extrinsic Motivation is depicted in Figure 1. There are several elements of the model that need to be detailed. The first element central to the model (and thus evident in the center of Figure 1) is that when dealing with motivation we must consider the constructs of intrinsic motivation (engaging in an activity out of pleasure and satisfaction), extrinsic motivation (engaging in an activity in order to obtain something outside the activity), and amotivation (the relative absence of motivation, intrinsic or extrinsic). More than 25 years of research has shown that these

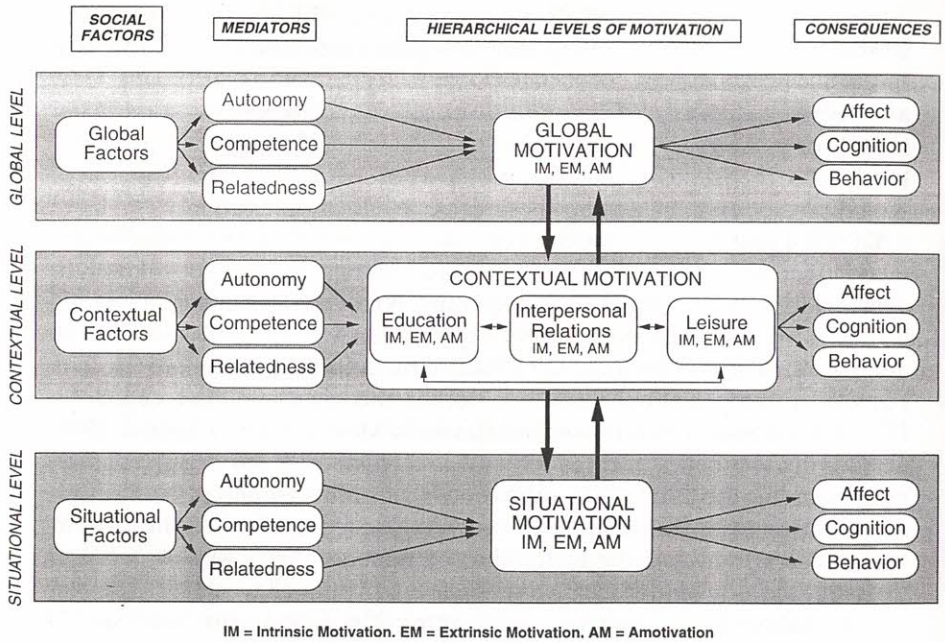

Fig. 1. The Hierarchical Model of Intrinsic (IM) and Extrinsic Motivation (EM). AM: Amotivation (From Vallerand, 1995).

constructs can explain a substantial portion of behavior. A second important element to consider is that intrinsic and extrinsic motivation, and amotivation exist within the individual at three hierarchical levels of generality. These levels are the global (or personality), contextual (or life domain), and situational (or state) levels. These different levels of generality allow us to consider motivation with more precision and refinement.

A third important element of the model focuses on motivational determinants (see the left-hand side of Figure 1). Several different aspects dealing with motivational determinants need to be underscored. A first is that motivation results from social factors at each of the three levels of generality. Thus, situational factors can affect situational motivation, contextual factors can affect contextual motivation, and finally global factors can affect global motivation. Second, the impact of social factors on motivation is mediated by perceptions of competence (interacting effectively with the environment), autonomy (feeling free to choose one's course of action), and relatedness (feeling connected to significant others) at each of the three levels. Social factors that do not impact these three types of perceptions should have minimal effects on motivation. A third aspect of the determinants of motivation is the top-down effect from motivation at the next higher level in the hierarchy on motivation at the next lower level in the hierarchy. Thus, for instance, global motivation will affect contextual motivation and contextual motivation will affect situational motivation. There should not be a direct effect of global motivation on situational motivation except in specific instances (to be detailed later). It should also be pointed out that motivation at the contextual and situational levels generally result from the effects of both intrapersonal influences (motivation at the next higher level in the hierarchy) and social factors at the appropriate level of generality. For example, motivation at the contextual level such as motivation toward school should be affected by one's global motivation and contextual factors present in the educational domain (e.g., the teacher's usual teaching style). A final aspect dealing with motivational determinants refers to what we call a specificity effect. That is, situational motivation (or one's motivation at a precise point in time) toward a given leisure activity, for instance, should be mainly affected by one's contextual motivation toward leisure activities in general and situational factors that are occurring at the very moment that the specific leisure activity is being engaged in. Factors unrelated to the leisure dimension should have minimal effects on situational motivation toward the leisure activity.

A fourth major element of the model deals with the recursive relationship between motivation at the different levels of generality (and thus the double arrows in the center of Figure 1). Thus, situational motivation on a longitudinal basis can produce recursive effects on the appropriate contextual motivation. For instance, experiencing low levels of situational intrinsic motivation on a regular basis in educational activities may eventually lead students to develop low levels of intrinsic motivation toward education at the contextual level. Similarly, motivation in one or several contexts can also have some recursive effects on global motivation over time.

A final element of the model is that motivation leads to different types of outcomes for the individual. This dimension of the model can be subdivided into four aspects. The first is that these motivational outcomes can be cognitive, affective, and behavioral in nature (see the right-hand side of Figure 1). The second point is that different motivations affect outcomes in a qualitatively different manner. The more positive consequences are produced by intrinsic motivation, whereas the most negative ones are produced by certain types of extrinsic motivation (especially external regulation) and amotivation. Thus, it is not sufficient to be motivated to derive positive outcomes from our efforts. What is needed is to be motivated in a self-determined fashion (intrinsic motivation and certain types of extrinsic motivation—integrated and identified regulation). The third point that is made explicit by Figure 1 is that consequences exist at three levels of generality (the global, contextual, and situational levels). Furthermore, as

implied by the right-hand side of Figure 1, the consequences are of the same level of generality as the level of generality of the motivation that engendered them. More specifically, situational motivation induces situational consequences (e.g., levels of attention toward a particular task at a specific time), contextual motivation produces contextual consequences, and global motivation leads to global consequences (e.g., life satisfaction). Finally, contextual consequences should be mainly determined by relevant contextual motivations. For instance, education-related outcomes (e.g., satisfaction toward education) should be the result of motivation toward education and not of motivation toward leisure activities.

An example may serve to illustrate some of the elements mentioned above. John is a 12-year-old adolescent. He is the type of person who does things generally because he likes them. Thus, he engages in his leisure activities and interacts with other people out of fun. Consequently, such activities generally lead him to experience pleasure and satisfaction. However, contrary to the contexts of leisure and interpersonal relationships, John goes to school because he has to. In that context, John feels that other people, and especially his teacher, force him to do things he would not choose to do. He feels controlled and experiences very little sense of autonomy. Consequently, his grades are not very high and he generally derives little satisfaction from his educational activities. However, in the last 3 weeks things started to change at school. His regular teacher was on sick leave and was replaced by a new teacher who is much less controlling. She allows students to express themselves and to try new things. Students are often allowed to work in groups, and John likes that. More and more John feels that he is going to school out of choice and, at times, pleasure. Consequently, his grades have started to improve and he generally feels happier at school. This afternoon, in the English class, the new teacher has just asked John and the other students to write an essay on the topic of their choice. John experiences feelings of autonomy and decides to follow his natural interest and to write about his favorite leisure activity, painting. He decides what he wants to say, prepares an outline, writes the first draft, checks his spelling of different words, writes his final draft, and finally without knowing it, class is over. He realizes that he was focused the whole time, that he actually had a good time, and he feels very satisfied with himself. He also experiences an inclination to write some more. In fact, later that day at recess, John picks up a pen and a sheet of paper and starts writing about Picasso.

The above example underscores several points with respect to the Hierarchical model. A first point is that humans are motivationally complex. It is therefore not sufficient to talk about motivation in general to describe a person. Rather, we should refer to a collection of motivations that vary

in types and levels of generality. In the example, John appeared to be intrinsically motivated toward leisure activities and interpersonal relationships, but to be extrinsically motivated toward education. Each of these different types of motivation represent a part of John, and if we are to understand this particular individual we should take into consideration the different motivations that describe him. In addition, these different types of motivation exist within the individual at three levels of generality. For instance, in the example we indicated that John is in general doing things because he enjoys them. Overall at the global level, John would appear to have an intrinsic motivation personality that would generally predispose him to be intrinsically motivated toward different contexts. Thus, John was intrinsically motivated toward leisure and interpersonal relationships. And finally, at the situational level, that specific day in the English class John was intrinsically motivated to write his essay. We feel that it is important to distinguish these different levels, as it should lead to a better understanding of motivational processes.

A second issue of interest is that motivation is not only an intrapersonal phenomenon, but also a social phenomenon. Indeed, other people can have a powerful impact on our motivation, just as John's former teacher had on his contextual motivation toward school. Although John has an intrinsic motivation personality, he is nevertheless extrinsically motivated toward school. Thus, intrapersonal factors (global motivation) are not the sole influences on motivation. Social factors, and in this case, contextual factors, can play an important role as determinants of (contextual) motivation. Motivational determinants also exist at the other two levels of generality. For instance, at the situational level, the new teacher's instructions as to how to write the essay seem to have had a positive effect on John's immediate (or situational) motivation at that specific time in the classroom. It thus appears that both intra- and interpersonal forces influence motivation.

Third, motivation leads to important consequences, and these may occur at the three levels of generality. At the contextual level, they may vary from context to context as a function of the relevant contextual motivation. For instance, John generally experiences positive benefits from his engagement in leisure and interpersonal activities. Such was not the case in education, however, because his motivation was extrinsic in nature. There, he felt unsatisfied with school and his grades were low. However, with the change of teacher (a change in contextual factors), his motivation became more intrinsic. Consequently, his grades started to go up and he felt much happier in the school context. At the situational level, it was seen that John's intrinsic motivation allowed him to remain focused during the whole English course, to feel good about himself, and to want to pursue writing

later that day at recess. Therefore, motivation does not appear to be an epiphenomenon, but rather seems to lead to important outcomes.

Finally, it is believed that instances of situational intrinsic motivation and associated positive benefits, such as those experienced by John in the English class, serve to facilitate contextual intrinsic motivation. It is thus not surprising that John is now more intrinsically motivated toward education in general: repeated instances of situational intrinsic motivation like the one in the English class have had recursive effects on his contextual motivation toward education.

The above example serves to exemplify some of the elements of the Hierarchical Model of Intrinsic and Extrinsic Motivation. The model, and the associated empirical evidence, is detailed below in the form of five postulates.

III. Postulate 1: A Complete Analysis of Motivation Must Include Intrinsic and Extrinsic Motivation and Amotivation

This first postulate posits that a complete analysis of motivation must deal with three important concepts, namely those of intrinsic motivation, extrinsic motivation, and amotivation. As will be made explicit in this chapter, these concepts are important because they (a) explain a large part of human behavior, (b) represent an important aspect of human experience, and (c) they lead to important and varied consequences. In this section, we address definitional issues. In this respect, three issues appear particularly important. First, we need to delineate the very nature of intrinsic and extrinsic motivation and amotivation, and show how they can be distinguished from one another. Second, we should address the issue of dimensionality of the constructs. Specifically, should we consider motivation as a unidimensional or multidimensional entity? Finally, it is crucial that we discuss assessment issues. These various points are discussed below.

A. ON THE NATURE OF INTRINSIC AND EXTRINSIC MOTIVATION AND AMOTIVATION

Intrinsic motivation generally refers to performing an activity for itself, and the pleasure and satisfaction derived from participation (e.g., Deci, 1975; Deci & Ryan, 1985a; Lepper et al., 1973). Students who go to school because they like to learn new materials are representative of intrinsically motivated individuals. Contrary to intrinsic motivation, extrinsic motivation

refers to engaging in an activity as a means to an end and not for its own sake. Thus, extrinsically motivated individuals do not engage in the activity for the inherent pleasure they may experience while performing it, but rather in order to receive something positive or to avoid something negative once the activity is terminated (Deci, 1975; Kruglanski, 1978). Workers who go to work simply in order to get the money they need to provide for their families represent one instance of extrinsically motivated individuals. On the other hand, amotivation refers to the lack of intentionality and thus the relative absence of motivation (Deci & Ryan, 1985a; Koestner, Losier, Vallerand, & Carducci, 1996). This concept is somewhat similar to learned helplessness (Abramson, Seligman, & Teasdale, 1978) because the amotivated individual experiences feelings of incompetence and expectancies of uncontrollability. Individuals who are amotivated are relatively without purpose with respect to the activity and therefore have little motivation (intrinsic or extrinsic) to perform it.

Although individuals who are amotivated show little or no motivation, those who are intrinsically motivated may be just as motivated to engage in a given activity as those who are extrinsically motivated. It is thus important to distinguish further these two types of motivation. This can be done on at least two bases. First, these two forms of motivation differ fundamentally from a teleological perspective. Whereas the purpose of participation for intrinsic motivation lies within the process itself, that of extrinsic motivation focuses on benefits that may be obtained as a result of participation. This distinction is often useful to better understand the motivation underlying the participation of individuals engaged in various activities such as work. For instance, if we asked individuals who are intrinsically motivated toward work if they would pursue their current line of work should they win a large sum at the lottery, they would probably say that they would likely continue working. This is because such individuals are not in that line of work primarily to make money, but mostly to enjoy themselves while engaging in the activity. They focus on the process, not on the outcomes. Conversely, extrinsically motivated individuals engage in the activity in order to reach some end results, such as receiving monetary payment. If they can achieve these ends more easily, they will gladly do so. Thus, such individuals would most likely stop working if they won the lottery.

Second, intrinsic and extrinsic motivation may also be distinguished from a phenomenological perspective. Being intrinsically motivated involves individuals experiencing pleasant emotions such as enjoyment and feeling free and relaxed. They experience little pressure or tension, and they are focused on the task. Conversely, being extrinsically motivated involves individuals feeling tense and pressured. Indeed, if the goals they seek following participation in the activity depend on their performance, they

may have good reasons to be nervous. Social approval, for instance, depends on others and is therefore to a large extent outside one's control. One can then understand the pressure that can be experienced when extrinsically motivated. However, as we will see below, different types of extrinsic motivation exist, some of which are self-determined and thus minimize the experience of tension and pressure.

B. INTRINSIC AND EXTRINSIC MOTIVATION AND AMOTIVATION: ONE OR SEVERAL DIMENSIONS?

Although most researchers have posited the presence of a unidimensional intrinsic motivation construct, certain theorists such as White (1959) and Deci (1975) have proposed that intrinsic motivation might be differentiated into more specific motives. More recently, Vallerand and his colleagues (Vallerand et al., 1989, 1992, 1993) posited the existence of three types of intrinsic motivation: intrinsic motivation to know, intrinsic motivation toward accomplishments, and intrinsic motivation to experience stimulation. Because this differentiation has been used to explore motivation in several life contexts, we will elaborate on this tridimensional conceptualization. Intrinsic motivation to know relates to constructs such as exploration (Berlyne, 1971), learning goals (Dweck & Leggett, 1988), intrinsic intellectuality (Lloyd & Barenblatt, 1984), intrinsic motivation to learn (Brophy, 1987), and intrinsic curiosity (Harter, 1981). Thus, intrinsic motivation to know can be defined as engaging in an activity for the pleasure and satisfaction that one experiences while learning, exploring, or trying to understand something new. For instance, chess players who play because they enjoy finding out more about the game display intrinsic motivation to know.

Intrinsic motivation toward accomplishments focuses on engaging in a given activity for the pleasure and satisfaction experienced while one is attempting to surpass oneself, or to accomplish or create something. The focus is on the process of accomplishing something and not on the end result. It relates to constructs such as effectance motivation (White, 1959), mastery motivation (Kagan, 1972), intrinsic challenge (Harter, 1981), and a task orientation where the individual seeks to experience competence (Nicholls, 1984). An example of this type of intrinsic motivation would be students who work on a term paper for the pleasure they experience while trying to create an excellent product.

Finally, intrinsic motivation to experience stimulation, the third type of intrinsic motivation, is operative when one engages in an activity in order to experience pleasant sensations associated mainly with one's senses (e.g., sensory and aesthetic pleasure). This type of intrinsic motivation has been

neglected in research but would appear to be related to constructs such as aesthetic experiences (Berlyne, 1971), flow (Csikszentmihalyi, 1975, 1978), sensation seeking (Zuckerman, 1979), and peak experiences (Maslow, 1970). Individuals who swim during their leisure time because they enjoy the pleasant sensations they experience while their bodies glide through water display this type of intrinsic motivation. The distinction among the different types of intrinsic motivation should prove useful because, among other things, it leads to the prediction of specific engagement in activities related to the three types of intrinsic motivation (Vallerand & Brière, 1990).

Extrinsic motivation has also been considered from a multidimensional perspective. It was originally believed that extrinsic motivation only pertained to behaviors that were prompted by external sources of control (e.g., teachers, parents). However, theory and research by Deci, Ryan, and their colleagues (e.g., Chandler & Connell, 1987; Deci & Ryan, 1985a; Ryan & Connell, 1989; Ryan, Connell, & Deci, 1985; Ryan, Connell, & Grolnick, 1992) have shown that different types of extrinsic motivation exist, some of which are self-determined in nature. That is, some behaviors, although not engaged in out of pleasure, may still be emitted choicefully. Deci and Ryan (1985a, 1991) have proposed four types of extrinsic motivation. They are briefly presented here.

External regulation refers to extrinsic motivation as it is generally construed in the literature. That is, behavior is regulated through external means such as rewards and constraints. For instance, a student might say: "I'm studying for tomorrow's exam because my parents will get upset if I don't." With introjected regulation, the individual begins to internalize the reasons for his or her actions. However, such internalization, though internal to the person, is not truly self-determined because it takes the form of contingencies parallel to the external ones. It is as if individuals replace the external source of control by an internal one and start imposing pressure on themselves to ensure that the behavior will be emitted. For instance, an individual who goes out with a friend because he thinks he should and would feel guilty if he did not, displays introjected regulation. One can sense the self-imposed pressure that is the source of this type of motivation. Motivation is internal, but it is not self-determined. It is only in the third type of extrinsic motivation, namely identified regulation, that behavior is emitted out of choice. When behavior is identified, it is highly valued and judged as important for the individual. It will thus be performed freely even if the activity is not pleasant in itself. For instance, a student might say, "I want to improve my math skills. It is important for me. Thus, I've decided to start studying weekends." Finally, an integrated regulation also involves emitting an activity choicefully. However, such choice is not solely restricted at the activity level, but is now a harmonious part of the organiza-

tion of the self. That is, one's choices are now made as a function of their coherence with other aspects of the self. Thus, the integrated student may decide not to go out with his friends on a Sunday night because this may conflict with his studying for tomorrow's exam.

In addition to suggesting the existence of different types of extrinsic motivation, Deci and Ryan (1985a) have also proposed that these types of extrinsic motivation vary in terms of the level of self-determination inherent in each one. Thus, they can be ordered along a self-determination continuum. From lower to higher levels of self-determination, they are external, introjected, identified, and integrated regulation. In addition, intrinsic motivation is hypothesized to have the highest level of self-determination and amotivation the lowest level of all. Much research now supports the self-determination continuum (e.g., Blais, Sabourin, Boucher, & Vallerand, 1990; Ryan & Connell, 1989; Vallerand & Bissonnette, 1992).

One cannot underestimate the theoretical contribution of Deci and Ryan with respect to the multidimensionality of extrinsic motivation. Before their contribution, researchers saw behavior in black and white, as either intrinsic or extrinsic in nature. This binary approach to classify motivation does not hold anymore because some types of extrinsic motivation (i.e., integrated and identified regulation) may be almost as self-determined as intrinsic motivation. As we will see in some of the studies reviewed in this chapter, the Deci and Ryan conceptualization is crucial in leading to a better comprehension of motivated behavior.

Finally, researchers have also considered amotivation from a multidimensional perspective. Deci and Ryan (1985a) initially defined amotivation as a loss of motivation that results from the belief that one's actions have no effect in bringing about desired outcomes. Incorporating the work of Deci and Ryan (1985a), Skinner (1995), and M. Seligman (1975), Pelletier and his colleagues (Pelletier, Dion, Tuson, & Green-Demers, 1997; Stewart, Green-Demers, Pelletier, & Tuson, 1995; Tuson & Pelletier, 1992) have proposed that there are four major types of amotivation. The first refers to amotivation due to capacity-ability beliefs. This is in line with the usual definition of Deci and Ryan where amotivation results from a lack of ability to perform the behavior. The second pertains to amotivation that results from the individual's conviction that the proposed strategy will not bring forth the desired outcomes (strategy beliefs amotivation). The third type of amotivation deals with capacity-effort beliefs. This type of amotivation results from the belief that the behavior is too demanding and the person does not want to expend the necessary effort to engage in it. Finally, the fourth type of amotivation, termed *helplessness beliefs,* refers to a general perception that one's efforts are inconsequential considering the enormity of the task to be accomplished.

Pelletier and his colleagues have applied their amotivation taxonomy to explain people's failure to engage in positive environmental behaviors (e.g., recycling, using products friendly to the environment, etc.). They have developed a scale, The Amotivation Towards the Environment Scale (AMTES), which assesses the four types of amotivation. Results from exploratory and confirmatory factor analyses supported the four-factor model. In addition, correlations with various constructs suggest that the different subscales are related to different outcomes relevant to the environment. It would thus appear that this multidimensional perspective might prove useful in future research.

C. ON THE ASSESSMENT OF INTRINSIC, EXTRINSIC, AND AMOTIVATION

Researchers have typically used affective (e.g., interest and positive attitudes toward the task), and behavioral (e.g., time spent on the task during a free-choice period) variables as indicators of intrinsic motivation, with the behavioral measure being the most popular. Although the use of affective and behavioral indicators is understandable from a methodological perspective, it is nevertheless troublesome from a conceptual standpoint because of its circularity. For instance, with respect to the behavioral measure, how do we determine if subjects are motivated? We assess time spent on the task. What leads subjects to spend some time on the task? Motivation. Thus, in this instance, behavior serves as both the index of motivation and the consequence. Bandura (1978) has underscored this fact: "Effectance motivation (or intrinsic motivation) is inferred from the behavior it supposedly causes" (p. 150). If we agree that it is impossible for a given index to refer conceptually to both the motivation and its consequence, we can see that the use of behavioral indicators of motivation is problematic. The same logic applies to affective indicators of intrinsic motivation.

A second critique of the use of affective and behavioral indices of intrinsic motivation is that it implicitly assumes that extrinsic motivation cannot positively influence affect and behavior. However, much field research now shows that self-determined forms of extrinsic motivation (i.e., integrated and identified regulation) foster positive affect and behavioral persistence (e.g., Blais et al., 1990; Vallerand & Bissonnette, 1992; Vallerand et al., 1989, 1993; Vallerand, Fortier, & Guay, in press). In addition, laboratory studies reveal that free-choice behavior is not always the reflection of situational intrinsic motivation (Reeve & Deci, 1996; Ryan, Koestner, & Deci, 1991) and can even reflect self-determined forms of extrinsic motivation (Deci, Eghrari, Patrick, & Leone, 1994).

Although intuitively appealing, the use of affective and behavioral measures to assess intrinsic and extrinsic motivation would thus appear to suffer from some important limitations. The present position is that we must measure motivation independently from its determinants and consequences (see Figure 1). This should provide conceptual clarity to our assessment of intrinsic and extrinsic motivation. By distinguishing motivation from its consequences, it becomes possible to determine when intrinsic motivation will produce cognitive, affective, and behavioral consequences, and when it will not, rather than assuming that it automatically will (and thus using the consequences as indicators of intrinsic motivation). It also allows one to compare the relative impact of intrinsic and extrinsic motivation on various types of outcomes.

In order to assess motivation independently from its determinants and consequences, our approach has been to focus on the very nature of motivation, that is, the "why of behavior" (McClelland, 1985). Doing so has enabled us to equate our operational measure of motivation with the conceptual definition typically used in the literature, that is, the perceived reasons (intrinsic or extrinsic) for engaging in an activity (e.g., Deci, 1971; Lepper et al., 1973), as well as tying this operational definition of motivation to its determinants and consequences without the problems of circularity described above. In order to get at this "why of behavior," we have used self-report questionnaires that offer participants reasons for engaging in an activity. Such reasons reflect the various concepts presented previously (i.e., intrinsic and extrinsic motivation and amotivation). Endorsement of the reasons is then assumed to reflect the underlying motivation.

The development of these questionnaires involved several steps. For instance, with respect to the Academic Motivation Scale (Vallerand et al., 1989, 1992, 1993), developed to assess contextual motivation toward education, we first conducted a focus group with college students in order to obtain participants' ecologically valid reasons for going to school that were also theoretically meaningful. Second, the reasons uncovered in focus groups were translated into items. Third, a pretest involving college students was conducted in order to ensure that the items were clear and relevant for this age group. Fourth, a first study was conducted in order to verify the scale factor structure using exploratory factor analysis. Fifth, this led to modifications and to a second version of the scale. Sixth, this second version of the scale was given to a second sample of students, and a confirmatory factor analysis was conducted on the data. Seventh, correlations were computed between the Academic Motivation Scale and other scales assessing contextual determinants and consequences in order to test for the scale's construct validity. Finally, test–retest correlations were computed.

TABLE I
SAMPLE ITEMS FROM EACH OF THE SEVEN SUBSCALES OF THE ACADEMIC MOTIVATION SCALE

"In general, why do you go to college?"	
Intrinsic motivation—Knowledge	"Because I experience pleasure and satisfaction while learning new things."
Intrinsic motivation—Accomplishments	"For the pleasure I experience while surpassing myself in my studies."
Intrinsic motivation—Stimulation	"For the high feeling that I experience while reading on various interesting subjects."
Identified regulation	"Because eventually it will allow me to enter the job market in a field that I like."
Introjected regulation	"To prove to myself that I can do better than just a high-school degree."
External regulation	"In order to get a more prestigious job later on."
Amotivation	"Honestly I don't know; I really feel that I'm wasting my time in college."

Table I shows some of the items of the Academic Motivation Scale. This scale is made up of seven subscales of four items each assessing the three types of intrinsic motivation (intrinsic motivation to know, to accomplish things, and to experience stimulation), three types of extrinsic motivation (external, introjected, and identified regulation), and amotivation.[1] The scale asks the question "Why do you go to college?"[2] (versions for elementary, high school, and university students have also been developed), and items represent possible answers to that question, thus reflecting the different types of motivation.

[1] We have not included the concept of integrated regulation in the Academic Motivation Scale and in several of our contextual motivation scales because results from our focus groups revealed that such types of reasons were not mentioned by participants. This may be because at this age (between 16 and 20 years) the self is still developing. This may make it hard for these individuals to be motivated out of integrated regulation because coherence between various evolving aspects of their self may be experienced less often than with older adults. In addition, in the Academic Motivation Scale and most of the scales that we have developed, we only focused on Deci and Ryan's original type of amotivation. This is because most of these motivation scales were developed before the recent theorizing of Pelletier and his colleagues.

[2] College in the Quebec educational system refers to a 2-year (for the program leading to university) or 3-year (for the technical terminal program) institution between high school and university. The average age of these students is around 18 years old. In this chapter, the term "college" will refer to this post-high school but pre-university institution.

In line with the Hierarchical model, we have developed scales to assess motivation at the global (Guay, Blais, Vallerand, & Pelletier, 1996), and situational levels (Guay & Vallerand, 1995, 1997). In addition, we have developed several measures of motivation at the contextual level aimed at assessing motivation toward different spheres of activities, such as leisure (Pelletier et al., 1995; Pelletier, Vallerand, Blais, Brière, & Green-Demers, in press), sports (Brière, Vallerand, Blais, & Pelletier, 1995; Pelletier et al., 1995), interpersonal (Blais, Vallerand, Pelletier, & Brière, 1994) and couple relationships (Blais et al., 1990), work (Blais et al., 1993), and aging (Vallerand & O'Connor, 1991; Vallerand, O'Connor, & Hamel, 1995).

Research on these scales has followed the same sequence of development as those involving the Academic Motivation Scale and has yielded impressive support for their reliability and validity. Scales have a sound factor structure, assessing independently the various types of motivation described earlier (intrinsic and extrinsic motivation, and amotivation). In addition, they have adequate levels of internal consistency and temporal stability (except, of course, for the situational motivation measure). In addition, scales are unrelated to social desirability (see Blais et al., 1990; Pelletier, Tuson, Green-Demers, Noels, & Beaton, 1996). Finally, as shown in later sections, the construct validity of the scales is supported by the fact that they predictably relate to various determinants and consequences.

A final element to be mentioned with respect to the assessment of intrinsic and extrinsic motivation is that sometimes researchers combine the different subscales into a self-determination index (e.g., Fortier, Vallerand, & Guay, 1995b; Grolnick & Ryan, 1987; Vallerand & Bissonnette, 1992). This is done by specifically weighting and adding the scores of the subscales so as to derive a single score. Because the various types of motivation are theoretically posited to lie on a continuum of self-determination from intrinsic motivation to integrated, identified, introjected, and external regulation, and to amotivation (Deci & Ryan, 1985a, 1991), weights are given to the motivational items according to their respective placement on this continuum.[3] Research reveals that this index, which has been used in several

[3] Therefore, intrinsic motivation, integrated, and identified regulation items are assigned the weights of +3, +2, and +1, respectively. On the other hand, amotivation, external, and introjected regulation items, because they are conceptualized as less self-determined forms of motivation, are assigned the respective weights of −3, −2, and −1. It should be noted that all three types of intrinsic motivation are given the same weight (+3), and the total for the three types of intrinsic motivation is divided by 3 to make it comparable to that of the other scales. The total score reflects the person's relative level of self-determined motivation. A positive score indicates that the person's motivational profile is self-determined, whereas a negative score reflects the presence of a non-self-determined motivation.

of the studies reviewed in this chapter, displays high levels of reliability and validity (e.g., Blais et al., 1990; Fortier et al., 1995b; Grolnick & Ryan, 1987; Vallerand & Bissonnette, 1992).

Although we favor a multidimensional approach to motivation, we do recognize that the use of a single score, such as the self-determination index, may at times be useful. For instance, the index may be used when researchers want to select individuals who display either a self-determined or a non-self-determined motivational profile (as assessed by the self-determined motivation index) and assign them to experimental conditions. In addition, testing a comprehensive theoretical model with structural-equation modeling may necessitate cutting down on the number of indicators (and thus latent variables) in order to provide an adequate test of the model. The self-determination index is then very useful. However, the use of a single score may at times lead to incomplete information. For example, it does not indicate which type of motivation (i.e., intrinsic motivation vs. identified regulation vs. amotivation) is the best predictor of various consequences. Furthermore, it fails to inform us on changes that may occur over time with respect to the impact of the different motivations on consequences.

A recent study by Pelletier, Fortier, Vallerand, and Brière (1996) illustrates this point. In this study, competitive swimmers completed various questionnaires including the Sport Motivation Scale. The two following years, the authors determined which swimmers persisted and which dropped out. Results from the structural-equation modeling analysis (using LISREL) revealed that amotivation and intrinsic motivation had respectively the most negative and positive impact on persistence. Furthermore, using the different motivations allowed the researchers to show that the impact of external regulation on persistence was negligible over the course of the first year, but negative over the second. On the other hand, the impact of introjected regulation on persistence was positive over the first year, but negligible over the second. Thus, two types of extrinsic motivation were found to have a different impact on persistence, and such effects changed over time. It thus appears that a multidimensional approach to motivation may yield valuable information that the index cannot provide. However, the use of a single index versus that of the different types of motivational constructs ultimately depends on the purpose of the study.

In sum, the concepts of intrinsic and extrinsic motivation and amotivation do seem important for a better understanding of human behavior. In addition, recent conceptual and methodological advances now allow us to consider these concepts from a multidimensional perspective.

IV. Postulate 2: Intrinsic and Extrinsic Motivation and Amotivation Exist at Three Levels of Generality: The Global, Contextual, and Situational Levels

Personality and social psychologists have long recognized the duality of the self: stability and change. Certain elements of the self seem very stable and general in nature. Others seem to be context-specific, and may even vary as a function of the current situation. This has led to two broad types of conceptual frameworks on the self. The first proposes that the self is a unitary and stable structure that is not subjected to the influence of the situation (e.g., Allport, 1955; Rogers, 1951), whereas the second posits that self-representations are multidimensional in nature and can vary from context to context (e.g., James, 1890; Mead, 1934), or even as a function of the current situation (e.g., Gergen, 1971).

Contemporary approaches to the self have come to reconcile these opposing perspectives by recognizing that both types of self-representations exist and can be integrated within hierarchical models of the self (e.g., Carver & Scheier, 1981; Harter, 1985; Kihlstrom & Cantor, 1984; McAdams, 1994; Shavelson, Hubner & Stanton, 1976). For instance, Shavelson et al. (1976) posited the existence of the self-concept at three levels of a hierarchy. In this model, a general self-concept appears at the top of the hierarchy and is proposed to be the most general and stable component. At the next level, more specific self-concepts exist and are divided into two broad contexts, namely academic and nonacademic self-concepts. Finally, at the third level, self-concepts are further distinguished into more specific activities. These more specific activities are of limited generality, quite specific, and closely related to actual behavior.

In the same vein, a hierarchy of motivation is herein proposed. In line with past motivation research, the second postulate states that intrinsic and extrinsic motivation and amotivation are represented within the individual at three hierarchical levels of generality. As can be seen from Figure 1, from top to bottom, these are the global, contextual, and situational levels.

A. MOTIVATION AT THE GLOBAL LEVEL

Motivation at the global level refers to a general motivational orientation to interact with the environment in an intrinsic, extrinsic, or amotivated way. Global motivation refers to relatively enduring individual differences with respect to people's motivations. This global level can be seen as representative of the personality tradition in intrinsic and extrinsic motivation

research. In the example presented in section II, John was described as an individual with a global intrinsic motivation orientation because he generally participates in activities because he enjoys them. This global type of motivation would typically orient John to interact with the environment for intrinsic reasons.

Research at the global level has generally related global assessments of intrinsic and extrinsic motivation and amotivation with adaptive versus maladaptive adjustment outcomes. For instance, Deci and Ryan (1985b) developed the General Causality Orientations Scale (GCOS) to assess adults' self-perceptions of causation of behavior. The scale has three subscales, the autonomy orientation (which deals with pleasure and choice in the initiation and regulation of behavior), the control orientation (where behavior is regulated by controls, whether external or internal), and the impersonal orientation (where people experience their behavior as being beyond their control). Thus, the autonomy orientation represents a mixture of intrinsic motivation and identified regulation, the control orientation corresponds to a mix of external and introjected regulation, and the impersonal orientation reflects amotivation. Deci and Ryan (1985b) found that individuals with an impersonal orientation tend to have high levels of external locus of control, self-derogation, depression, social anxiety, and low levels of self-esteem. On the other hand, individuals with an autonomy orientation tend to have high levels of ego development and self-esteem and a low level of anxiety. Results with the control orientation revealed a positive association with the Type A behavior pattern. Koestner and Losier (1996) and Hodgins, Koestner, and Duncan (1996) provide recent reviews of research using the GCOS.

Guay, Blais, Vallerand, and Pelletier (1996) developed the Global Motivation Scale in order to assess global motivational orientations in a more differentiated manner than the GCOS. The autonomy orientation of the GCOS confounds intrinsic motivation and identified regulation, whereas the control orientation confounds external and introjected regulation. Thus, the Global Motivation Scale assesses independently the seven constructs that were described previously (intrinsic motivation toward knowledge, accomplishment, and stimulation, as well as external, introjected, and identified regulation, and amotivation). Guay et al. (1996) reported that all three types of global intrinsic motivation and identified regulation were positively associated with life satisfaction, whereas external regulation and amotivation were negatively related to it. Table II presents sample items from the Global Motivation Scale.

Although not exhaustive, the above cursory review of research at the global level reveals, in line with Postulate 2, that global motivation represents a broad orientation to be intrinsically, extrinsically, or amotivated in

TABLE II
SAMPLE ITEMS FROM EACH OF THE SEVEN SUBSCALES OF THE GLOBAL MOTIVATION SCALE

	"In general, I do things . . ."
Intrinsic motivation—Knowledge	". . . because I like to discover interesting new things."
Intrinsic motivation—Accomplishments	". . . because I like the feeling of being able to master what I do."
Intrinsic motivation—Stimulation	". . . because of the positive stimulation I experience while doing these activities."
Identified regulation	". . . because I choose to do them in order to reach my goals."
Introjected regulation	". . . because I would feel guity if I did not do them."
External regulation	". . . because I don't want to let other people down."
Amotivation	". . . although I don't see what it does for me."

general.[4] The correlations with broad measures of personality and adjustment also reveal that it reflects a global orientation that may not be strongly related to more specific modes of functioning to be found in contexts and situations. Rather, in order to better predict such functioning, we believe that motivation needs also to be assessed at the other levels of the hierarchy.

B. MOTIVATION AT THE CONTEXTUAL LEVEL

Motivation at the second level, that is the contextual level, refers to one's usual motivational orientation toward a specific context. Context refers to "a distinct sphere of human activity" (Emmons, 1995). Examples of social contexts are education, work, leisure, and interpersonal relationships. We feel that it is important to incorporate the contextual level into the present model for several resons. First, it reflects a basic fact: people's motivational orientation may vary drastically from one context to another. For instance,

[4] Amabile, Hill, Hennessey, and Tighe (1994) have also developed a scale, the Work Preference Inventory (WPI), to assess people's perceptions of themselves as being generally intrinsically and/or extrinsically motivated. Thus, this scale would appear to assess global motivation. However, the WPI also includes certain items dealing with education (for students) or work (for workers). These are limited in number, and most items appear to tap a global motivational orientation. In any event, future research with the WPI should seek to clearly determine if it is a global or contextual scale.

in our example, John was generally intrinsically motivated toward his leisure and interpersonal activities but extrinsically motivated toward education. Research by Graef, Csikszentmihalyi, and Gianinno (1983) has indeed shown that there is important variation in the levels of intrinsic and extrinsic motivation as a function of context. For example, it was found that high levels of extrinsic motivation were generally reported at work and during household chores, but high levels of intrinsic motivation were reported during meals and socialization with friends. It would thus appear important to consider the context when dealing with motivation.

Second, it is also important to consider motivation at the contextual level because contextual motivation is more subject to variations than is global motivation. Therefore, it is more likely to be useful in explaining and predicting changes in outcomes that may take place in specific contexts. For instance, one would have a tough time explaining John's change in educational outcomes (more positive affect and better grades) using a global (personality) measure of motivation. However, with a contextual measure that is more sensitive to influences specific to that context (e.g., the change in teacher), the change in motivation may be assessed and can be related to the change in educational outcomes.

A final reason for incorporating motivation at the contextual level in our model is that it lends itself well to field research that can yield important theoretical and applied benefits. By examining motivation at the contextual level, it becomes possible to provide real-life tests of current theory and research on intrinsic–extrinsic motivation. In addition, because field research in motivation is often targeted at applied problems (e.g., high school dropout, Vallerand et al., in press), it may provide a better understanding of the processes involved in such problems, thereby leading to potential insights concerning future interventions.

Over the past 15 years, there has been a surge of research examining motivation at the contextual level. This research has been largely conducted in field settings, in contexts as diverse as education (e.g., Deci et al., 1981; Vallerand & Bissonnette, 1992), politics (Koestner et al., 1996), work (Blais et al., 1993), leisure (Pelletier et al., 1995), sports (Pelletier et al., 1995), and interpersonal and couple relationships (Blais et al., 1990, 1994) (see Deci & Ryan, 1991; Ryan, 1995; Vallerand, 1993, for reviews of motivation research in various contexts). Some of this research has examined the determinants of motivation. For instance, research has shown that fitness class participants who have the opportunity to decide which type of exercises to engage in display higher levels of intrinsic motivation than those who do not have such a choice (Thompson & Wankel, 1980). Other research has looked at the relation between motivation and outcomes. For example, it has been found that workers

who are motivated out of intrinsic motivation and identified regulation are more satisfied with their work and less likely to entertain intentions to change jobs (e.g., Blais et al., 1993; Richer & Vallerand, 1996a). Finally, some research has considered both the determinants and consequences of motivation by using longitudinal designs. For example, Beauchamp, Halliwell, Fournier, and Koestner (1996) showed that over a 14-week period beginning golfers who were coached in an autonomy-supportive manner eventually developed a more self-determined motivational profile for playing golf. In turn, they showed greater evidence of having internalized the strategies that were taught, and they displayed better performance than golfers coached in a controlling manner.

Our own work at the contextual level has focused mostly on young adults' motivation. In that respect, a first step was to identify which contexts seemed most relevant for this population. We thus conducted a study in which we asked several hundred male and female college students to rate the importance of 21 life contexts (Blais, Vallerand, Gagnon, Brière, & Pelletier, 1990). These life contexts were obtained through a literature search, as well as focus groups with college teachers and students. Participants were asked to rate the importance of each life context on three measures: subjective importance, frequency of involvement, and perceived impact. Using a composite index of these measures, the results showed that the three most important contexts for both males and females were education, interpersonal relationships, and leisure.

In line with these findings, our initial efforts were targeted at the contexts of education, interpersonal relationships, and leisure (see Figure 1). Of the three contexts, only education has been the focus of much research on intrinsic and extrinsic motivation (see Deci, Vallerand, Pelletier, & Ryan, 1991; Lepper & Hodell, 1989; Rigby, Deci, Patrick, & Ryan, 1992, for some reviews). Although some research had been conducted in the interpersonal relationships context (e.g., Boggiano, Klinger, & Main, 1986), it generally dealt with couple relationships and dating (see Blais et al., 1990, for a review) but not friendship. Yet friendship is what young adults have in mind when the term "interpersonal relationships" is evoked (Blais et al., 1990). Finally, very little research has been conducted with respect to leisure activities from an intrinsic–extrinsic motivation perspective (see Csikszentmihalyi & LeFevre, 1989; Haworth & Hill, 1992, for exceptions). The neglect of the leisure context may have been due to the fact that most people assume that leisure activities are generally engaged in out of intrinsic motivation. Research now reveals that it is not always the case (Csikszentmihalyi & LeFevre, 1989; Graef et al., 1983; Pelletier, et al., 1995).

In light of the above, a second step in our research was to construct and validate scales in these three contexts. There were none in interpersonal relationships and leisure, and although there were some in education (e.g., Gottfried, 1985; Harter, 1981), these did not assess the entire spectrum of motivations we were interested in.[5] Thus, we have developed and validated the Academic Motivation Scale (Vallerand et al., 1989, 1992, 1993), the Interpersonal Motivation Inventory (Blais et al., 1994), and the Leisure Motivation Scale (Pelletier et al., in press). Because sport represents an important form of leisure for young adults, as well as an ideal field setting for research (Mahoney, 1989), we also developed the Sport Motivation Scale (Brière et al., 1995; Pelletier, Fortier, Vallerand, Tuson, Brière, & Blais, 1995). These scales were developed and validated using the approach discussed in section IIIC and typically assess the seven types of motivation (intrinsic motivation toward knowledge, accomplishment, and stimulation, identified, introjected, and external regulation, and amotivation). Table I presents sample items from one contextual motivation scale, namely the Academic Motivation Scale.

C. MOTIVATION AT THE SITUATIONAL LEVEL

The situational level represents the third and last level in the hierarchy (see Figure 1). Situational motivation refers to the motivation individuals experience when they are currently engaging in an activity. It refers to the here and now of motivation. For example, in our introductory example, John was intrinsically motivated when he was preparing his essay in the English class. We feel that the addition of the situational level to the hierarchy is important because it adds a central element: it focuses on people's motivation when and where they experience it. To paraphrase Ryan (1995, p. 416), we could say that "life is not lived as a trait" (the global level), nor as contextualized tendencies, but in situations. The situational level is thus essential to a better understanding of people's lives.

Research at the situational level has largely involved laboratory experiments (see Deci, 1975; Deci & Ryan, 1980, 1985a, 1991, for reviews). Typically, the experimenter introduces an independent variable (e.g., reward, feedback) and assesses its impact on the subject's motivation at that specific

[5] One of the limitations of Gottfried's (1985) scale is that it does not measure motivation toward going to school as such, but rather motivation toward specific subjects (e.g., math, social sciences, etc.). In addition, this scale only assesses intrinsic motivation (or interest) and not extrinsic motivation or amotivation. With respect to Harter's (1981) Intrinsic/Extrinsic Orientation Scale, it pits intrinsic and extrinsic motivation against one another, thereby assuming that a student cannot be both intrinsically and extrinsically motivated toward education in general. More recently, Harter and Jackson (1992) have recognized that this might represent an important problem. In addition, the scale focuses on only one type of extrinsic motivation, namely external regulation. Finally, like Gottfried's scale, it does not assess amotivation.

moment. Motivation at this level of generality has been measured either through the free-choice period or through questionnaires assessing one's interest toward the activity. Because of the methodological limitations of these two types of measures and in order to be consistent with the assessment strategy used at the other two levels, we have developed the Situational Motivation Scale (Guay & Vallerand, 1995, 1997). An advantage of this scale is that, unlike the free-choice measure, it can be used both in laboratory and field settings. The Situational Motivation Scale assesses the individual's motivation while he or she is currently performing an activity (and thus is a state measure) and has been validated in the same fashion as the contextual and global motivation scales. However, because it is a situational scale and thus needs to be brief, it only measures four types of motivation (intrinsic motivation, identified and external regulation, and amotivation). The psychometric credentials of this scale have been supported through factor analysis, high internal consistency values, and appropriate construct validity through predicted relationships with specific antecedents and outcomes (Guay & Vallerand, 1995). Table III provides some examples of items from the Situational Motivation Scale.

The above cursory review has revealed that motivation research has been conducted at each of the three levels of generality. However, within the confines of each study, researchers have typically focused on motivation at only one level of generality. Thus, although research on self-processes (e.g., Schell, Klein, & Babey, 1996; Shavelson et al., 1976) support the validity of hierarchies similar to the one proposed here, very little direct support exists for such a structure with respect to intrinsic and extrinsic motivation. However, in a recent study to be detailed in a later section, Vallerand and Guay (1996) had college students complete motivation scales at the three levels of generality. Results from a structural equation modeling analysis provided support for a model involving motivation at the three levels of generality as proposed by the Hierarchical model. It would thus appear that these levels of motivation can be empirically distinguished from one another and do form a hierarchy as posited.

TABLE III
SAMPLE ITEMS FROM EACH OF THE SUBSCALES OF THE SITUATIONAL MOTIVATION SCALE

"Why are you currently doing this activity?"	
Intrinsic motivation	"Because it is interesting."
Identified regulation	"Because I have chosen to do it for my own good."
External regulation	"Because I am supposed to do it."
Amotivation	"I am doing the activity, but I am not sure if it is worth it."

Another hypothesis to be addressed is that the level of stability in motivation increases as we move from situational motivation to contextual motivation to global motivation. Thus, global motivation should be the most stable motivation, and situational motivation the most labile. Although no research to date has tested this hypothesis, it is nevertheless in line with research on the Shavelson and Marsh (1986) hierarchical model of self-concept that has shown that self-concept is more stable as we move toward the apex of the hierarchy. Future research should directly test this hypothesis with global, contextual, and situational measures of motivation.

In sum, in line with Postulate 2, research reveals that intrinsic and extrinsic motivation, and amotivation exist at three levels of a hierarchy that goes from the global to the contextual to the situational level. In addition, research with young adults reveals that three contexts are central to their lives, namely education, interpersonal relationships, and leisure activities. Finally, our recent methodological work has enabled us to develop scales assessing the same motivational constructs at each of the three levels of the hierarchy.

V. Postulate 3: Motivation Is Determined by Social Factors and Top-Down Effects from Motivation at the Next Level up in the Hierarchy

Postulate 3 deals with the determinants of motivation. It is made up of three corollaries that are presented next.

A. COROLLARY 3.1: MOTIVATION CAN RESULT FROM SOCIAL FACTORS THAT ARE EITHER GLOBAL, CONTEXTUAL, OR SITUATIONAL DEPENDING ON THE LEVEL OF GENERALITY

Corollary 3.1 deals with the social determinants of motivation. As can be seen from the left-hand side of Figure 1, it is proposed that social factors influence motivation. By social factors, we refer to both human and nonhuman factors found in our social environment. We distinguish between situational, contextual, and global factors in the following manner. Situational factors refer to variables that are present at a given point in time but not on a permanent basis. Contextual factors represent variables that are present on a general or recurrent basis in one specific life context (e.g., having a controlling teacher at school) but not in another (e.g., the teacher is part of the student's education context, but not his or her leisure context). Finally, global factors refer to social factors with a presence so pervasive

they are present in most aspects of the person's life (e.g., living in a house for delinquent children).

Research has shown that social factors do have an influence on motivation. With respect to situational factors, much laboratory research has shown the negative immediate influence on situational intrinsic motivation of a host of variables such as rewards (Deci, 1971; Ryan, Mims, & Koestner, 1983), deadlines (Amabile, De Jong & Lepper, 1976; Dollinger & Reader, 1983), evaluation (e.g., Benware & Deci, 1984; Harackiewicz, Manderlink, & Sansone, 1984), surveillance (e.g., Lepper & Greene, 1975; Pittman, Davey, Alafat, Wetherill, & Kramer, 1980), and competition (e.g., Deci, Betley, Kahle, Abrams, & Porac, 1981; Vallerand, Gauvin, & Halliwell, 1986a,b). For instance, in one particular study, Deci et al. (1981) had college students work with visuospatial puzzles under one of two conditions. In the first condition, participants were asked to compete in order to beat an opponent by completing more puzzles than him or her. In the second (control) condition, participants were only asked to engage in the activity in order to solve the puzzles. Following task completion, participants were left alone and the time spent on the task (the behavioral measure of intrinsic motivation) was assessed. Results showed that subjects who engaged in the competition condition subsequently spent less time (and thus displayed lower levels of intrinsic motivation) than subjects in the no-competition condition. Other factors such as choice (Zuckerman, Porac, Lathin, Smith, & Deci, 1978), and positive feedback (Vallerand & Reid, 1984, 1988) have been found to have a positive impact on situational intrinsic motivation (see Deci & Ryan, 1985a, Lepper & Greene, 1978b; and Pelletier & Vallerand, 1993, for reviews of studies dealing with the effect of situational factors on intrinsic motivation).

The impact of a given situational factor on situational motivation may not be longlasting, especially if the factor is presented only once. A study by Loveland and Olley (1979) nicely illustrates this point. In this study, the researchers had children engage in a drawing task on three separate occasions: in a pretest without any independent variable, in order to receive a reward, and 7 days later without rewards. On each occasion, a behavioral measure of intrinsic motivation was used. The results revealed that for children who enjoyed the task at the pretest, reception of the reward undermined their situational intrinsic motivation during their second encounter with the task (the usual negative effect of rewards on intrinsic motivation).[6] However, 7 days later, in the

[6] In the Loveland and Olley (1979) study, there were also participants who showed low levels of intrinsic motivation at the pretest (they spent a low amount of time on the task during the pretest free-choice period). Following reception of the reward, these participants experienced an increase of situational intrinsic motivation. At posttest, their situational intrinsic motivation also returned to baseline level. Future research is needed in order to determine why these participants showed an increase of time spent on the task following reception of the reward.

absence of the reward, their motivation was back to the pretest level. Thus, although situational factors may have an impact on situational motivation at the very time they are present, their impact may be limited to that very moment. In order to have longlasting effect, they may need to be presented on a more regular basis and probably in the same context. At that point they become contextual factors.

As indicated earlier, contextual factors represent variables that are present on a general basis in one specific life context or that recur on a regular basis in that specific domain. Such variables are hypothesized to affect motivation toward that specific context only. For instance, the teaching style of a grade two elementary teacher represents a potent contextual factor that may affect children's more enduring motivation toward school because at this level, children interact almost exclusively with that very teacher at school. Much research has been conducted on the effects of contextual factors on contextual motivation. For instance, in education, researchers have assessed the impact of the type of school (e.g., Harter, 1981; Matthews, 1991), curriculum (e.g., Senécal, Vallerand, & Pelletier, 1992), classroom structure (e.g., Garibaldi, 1979; Johnson, Johnson, Johnson, & Anderson, 1976), and the teacher's interactive style (e.g., Deci, Nezlek, & Sheinman, 1981; Deci, Schwartz, Sheinman, & Ryan, 1981) on students' contextual motivation toward education. In leisure activities, the impact of sport scholarships (E. Ryan, 1977, 1980), competitive structures (e.g., Fortier, Vallerand, Brière, & Provencher, 1995a), the instructor or coach's interactive style (e.g., Pelletier, Fortier, Vallerand, & Brière, 1996), and the fitness decision-making process (e.g., Thompson & Wankel, 1980) have been studied. Finally, one finds very little research on the contextual determinants of motivation toward interpersonal relationships, because most studies have focused on motivational consequences (e.g., Blais et al., 1990; Rempel, Holmes, & Zanna, 1985; Seligman, Fazio, & Zanna, 1980). However, some research has looked at the effects of interpersonal climate (Blais et al., 1994) on contextual motivation toward interpersonal relationships (see also Pittman, Boggiano, & Main, 1992, for a review).

It is possible to summarize the findings of the above studies through Deci and Ryan's (1987) distinction between the support of autonomy and the control of behavior. Variables that lead individuals to feel controlled produce a decrease in contextual intrinsic motivation and identified regulation, but to an increase in amotivation and in certain cases external regulation. On the other hand, contextual factors that enhance individuals' autonomy lead to an increase in contextual intrinsic motivation and identified regulation, but to a decrease in amotivation and external regulation.

For instance, in one specific study in the educational context, Deci, Schwartz, Sheinman, and Ryan (1981) assessed the contextual motivation of elementary students at the beginning and then 2 months into the school

year using the Harter (1981) Intrinsic–Extrinsic Motivation Inventory. They also assessed teachers' level of behavior control versus autonomy support toward students. Results revealed that students who were with autonomy-supportive teachers experienced an increase in intrinsic motivation, whereas those who were with controlling teachers experienced a decrease in intrinsic motivation. Furthermore, once that change in intrinsic motivation was established, it was maintained throughout the school year. Thus, the findings of this study illustrate the fact that contextual factors do produce change in contextual motivation. In addition, such factors serve also to maintain contextual motivation as long as they are in place.

Finally, as indicated earlier, global factors refer to social factors that are present in most contexts of the person's life. Such factors can affect the individual's usually stable global motivation. An example of a pervasive global factor would be the type of nursing homes elderly individuals live in. Being confined to only one social environment for all of one's life activities can have a profound impact on one's global motivation. In fact, several authors have reported drastic change in elderly individuals' outlook on life after moving to nursing homes, with some individuals becoming helpless and highly dependent on the staff (Seligman, 1975). We believe that such a loss of global motivation is induced by the type of global social environment that is fostered in the nursing home. This is supported by a study by Vallerand and O'Connor (1991). These researchers showed that elderly individuals living in nursing homes where autonomy is fostered display a more self-determined motivational profile (higher levels of intrinsic motivation and identified regulation, but lower levels of amotivation and external regulation) in six life domains (health, leisure, biological needs, current events, religion, and interpersonal relationships) than individuals living in nursing homes where there is little room for autonomy. Although global motivation as such was not assessed in that particular study, the fact that six life domains were uniformly affected in the same direction would tend to suggest that the impact of the nursing homes on the residents' global motivation did occur.

It is further proposed that the influence of the three types of social factors on motivation is largely specific to the appropriate level in the hierarchy (see Figure 1). Thus, situational factors should influence situational motivation, but not contextual or global motivation, contextual factors should influence contextual motivation, but not global motivation, and global factors should influence global motivation. There is some support for this hypothesis. In a recent study (Vallerand, 1996b), we assessed the effect of a commonly used situational variable (success or failure) on motivation at the situational, contextual (leisure), and global levels. College students engaged in hidden-figure puzzles called the NINAs. The puzzles are cartoon-style drawings in which

the name NINA is embedded several times. Participants were led to experience either success or failure. They then completed the Situational Motivation Scale (Guay & Vallerand, 1995), the Leisure Motivation Scale (Pelletier et al., in press), and the Global Motivation Scale (Guay et al., 1996). In line with our reasoning, the impact of success or failure on the task only affected situational motivation, but not contextual or global motivation.

Distinguishing among the three levels of social factors allows for an integrated analysis of motivational determinants at different levels of the hierarchy. That is, social factors at one level of the hierarchy may interact with social factors at a second level. For instance, Pallak, Costomiris, Sroka, and Pittman (1982) showed that good-player awards were interpreted as conveying competence information and therefore increased situational intrinsic motivation when offered to children in schools where such rewards were regularly used. However, they were perceived as being controlling, and thus decreased situational intrinsic motivation, when presented to children in schools where they were not typically used. These results suggest that contextual factors may serve to affect the meaning of situational factors. One can thus see the usefulness of a more refined analysis of social factors offered by the present model.

B. COROLLARY 3.2: THE IMPACT OF SOCIAL FACTORS ON MOTIVATION IS MEDIATED BY PERCEPTIONS OF COMPETENCE, AUTONOMY, AND RELATEDNESS

It was posited in Corollary 3.1 that social factors influence motivation. However, the impact of social factors on motivation is hypothesized to take place mainly through people's perceptions of social events. A study by McAuley and Tammen (1989) nicely illustrates this point. In this study, university physical education students who had been matched for basketball shooting ability were asked to play a game in which players attempt to make shots that their opponents will not. At the end of the game, a winner and a loser were declared. Following the game, participants indicated their perceptions of success and failure as well as completed the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989; Ryan, 1982). This scale assesses situational intrinsic motivation through feelings of interest and enjoyment, pressure and tension (reverse scoring), effort, and competence. The results revealed that winners reported marginally more intrinsic motivation than losers. However, individuals who had perceived themselves as successful (even if they lost) reported significantly higher levels of intrinsic motivation than participants who felt that they were not successful. These findings indicate that it is the perceptions of the social factor and not necessarily its objective presence that primarily influences motivation.

Although it is now accepted that peoples' perceptions of their social environment is a key determinant of their motivation, it is nevertheless essential to determine what type of perceptions influence motivation. Over the past 25 years or so, several theoretical frameworks have been proposed to explain how people's perceptions may affect motivation (e.g., Bandura, 1986; Csikszentmihalyi & Nakamura, 1989; Deci & Ryan, 1985a; Dweck & Leggett, 1988; Lepper & Greene, 1978a). One theoretical perspective that appears to provide a rather complete account of such processes is cognitive evaluation theory (Deci, 1975; Deci & Ryan, 1985a, 1991), a subtheory of self-determination theory. According to this theory, situational factors affect motivation through their impact on peoples' perceptions of competence, autonomy, and relatedness. This is because these perceptions relate to fundamental human needs that individuals seek to satisfy. The need for competence implies that individuals have a desire to interact effectively with the environment in order to experience a sense of competence in producing desired outcomes and preventing undesired events (Connell & Wellborn, 1991; Deci, 1975; Deci & Ryan, 1985a; Harter, 1978; White 1959). On the other hand, the need for autonomy reflects a desire to engage in activities of one's own choosing, to be the origin of one's own behavior (deCharms, 1968; Deci, 1975, 1980; Deci & Ryan, 1985a). Finally, the need for relatedness (Bowlby, 1988; Harlow, 1958) involves feeling connected (or feeling that one belongs in a given social milieu; see Baumeister & Leary, 1995; Ryan, 1993, for recent reviews on belongingness and/or relatedness). As Deci and Ryan (1994) suggested, "People are inherently motivated to feel connected to others within a social milieu, to function effectively in that milieu, and to feel a sense of personal initiative while doing so" (p. 7).

Situational factors that facilitate feelings of competence, autonomy, or relatedness will lead individuals to freely reengage in the activities in which these perceptions were experienced because such activities allow individuals to satisfy their needs. Thus, according to cognitive evaluation theory, situational factors that facilitate perceptions of competence, autonomy, and relatedness will increase situational intrinsic motivation and selfdetermined forms of motivation, whereas those that impair such perceptions will have a negative effect on intrinsic motivation and self-determined forms of motivation and will facilitate non-self-determined forms of motivation and amotivation. Expanding from cognitive evaluation theory (Deci & Ryan, 1985a, 1987, 1991), it is proposed herein that the mediational role of perceptions of competence, autonomy, and relatedness is not limited to the situational level but applies to all three levels of the hierarchy. In other words, global, contextual, and situational factors

will have an impact on motivation to the extent that they influence people's perceptions of competence, autonomy, and relatedness at their respective level of the hierarchy.

Support for Corollary 3.2 has been obtained especially with respect to perceptions of competence at the situational level. For instance, in the first study to test the mediational effects of perceptions of competence on intrinsic motivation, Vallerand and Reid (1984) had participants engage in a balancing task (the stabilometer) during a pretest and a posttest. During the posttest, participants received either positive, negative, or no-performance feedback. Following both the pretest and the posttest, participants completed questionnaires assessing situational perceptions of competence and intrinsic motivation (the Mayo Task Reaction Questionnaire, Mayo, 1977). A path analysis was conducted using the change scores from pretest to posttest in perceptions of competence and intrinsic motivation, and dummy coding for the feedback conditions. It was hypothesized that the effect of performance feedback on situational intrinsic motivation would be mainly mediated by perceptions of competence. As can be seen from Figure 2, results supported the hypothesis. The more positive the feedback, the more participants felt competent. In turn, the more participants feltcompetent, the more they were intrinsically

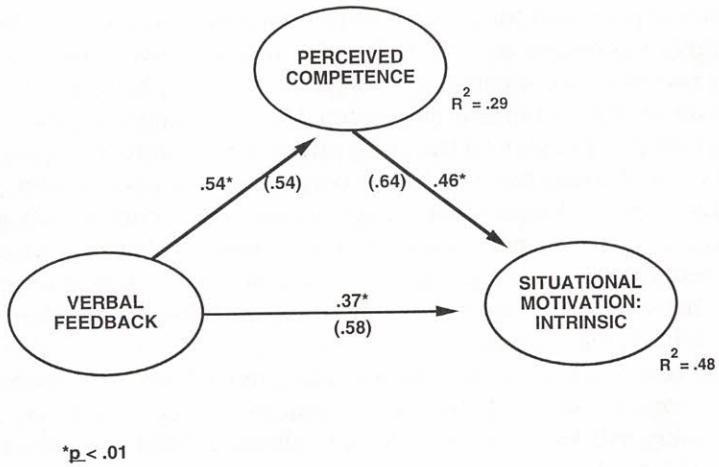

Fig. 2. The mediating effects of perceived competence on the verbal feedback-situational intrinsic motivation relationship. Numbers on the arrows are the beta weights, whereas those in parentheses are the pearson correlations. R^2 is the percentage of explained variance. (Adapted from Vallerand & Reid, 1984.)

motivated. Perceptions of competence explained 40 out of 48% of the variance in situational intrinsic motivation. It should also be noted that verbal feedback had a significant effecton intrinsic motivation, possibly because perceptions of autonomy and relatedness were not assessed. The findings from the Vallerand and Reid (1984) study have been replicated with different tasks, populations, and settings (Harackiewicz & Larson, 1986; Vallerand & Reid, 1988; Whitehead & Corbin, 1991). Finally, it also appears that the mediating effects of perceptions of competence are particularly strong when the main goal of the individual is to achieve competence (Sansone, 1986) and when the individual's feelings of autonomy are supported (Ryan, 1982).

Other studies have assessed the mediating effects of the other types of perceptions (autonomy and relatedness) at the situational level. Thus, Reeve and Deci (1996) assessed the mediating function of perceptions of competence and autonomy in a competitive setting. Past research had shown that competition can decrease situational intrinsic motivation because it presumably undermines individuals' sense of autonomy (through a self-imposed limit on which strategies to be used in order to win; Vallerand, Gauvin, & Halliwell, 1986a) and competence (especially for those who lose the competition; Vallerand, Gauvin, & Halliwell, 1986b). In the Reeve and Deci study, participants were assigned to conditions of winning or losing (competitive outcome) and being pressured or not to win (interpersonal context). Following the competition, participants completed situational measures of perceived competence and autonomy and a behavioral measure of intrinsic motivation was taken. Results from analyses of variance (ANOVA) revealed that winning and not being pressured to win had positive effects on situational intrinsic motivation. More important, however, results from a path analysis showed that these effects were completely mediated by perceptions of competence and autonomy. Finally, in a team-sport setting, Blanchard and Vallerand (1996a, Study 2) showed through a path analysis that not only perceptions of competence and autonomy but also perceptions of relatedness mediated the impact of personal and team performance on situational self-determined motivation (using the self-determination index) during a basketball game.

Other research has assessed the mediating role of perceptions of competence, autonomy, and relatedness at the contextual level. For instance, in one study dealing with leisure, Blanchard and Vallerand (1996b) asked basketball players to complete scales assessing their perceptions of the coach's autonomy-supportive style (adapted from Deci, Schwartz, Sheinman, & Ryan, 1981), as well as the team cohesion (adapted from Carron, Widmeyer, &

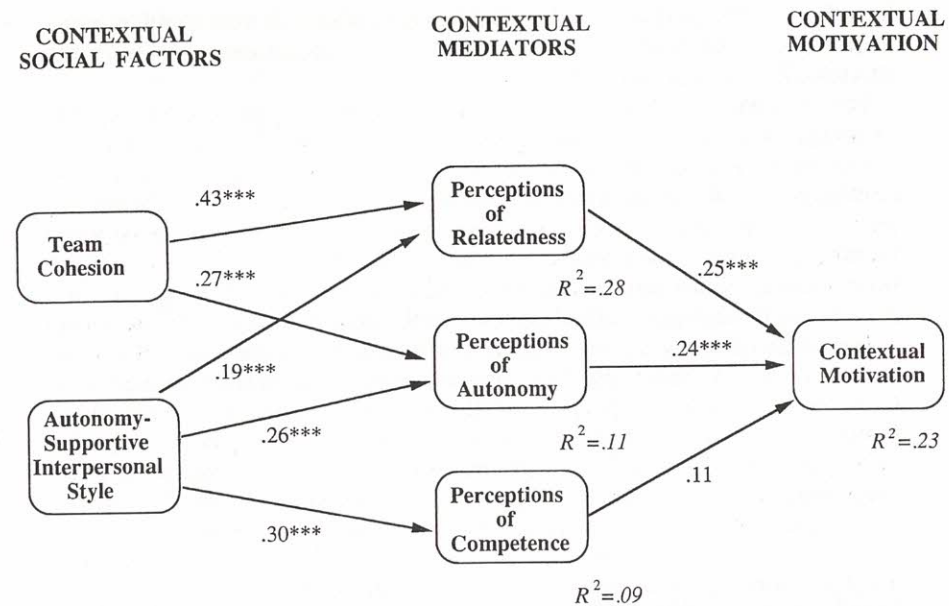

Fig. 3. The mediating effects of perceptions of competence, autonomy, and relatedness on the social factors self-determined contextual motivation relationship. Numbers on the arrows are the beta weights and R^2 is the percentage of explained variance (***$p < .001$). (From Blanchard & Vallerand, 1996b).

Brawley, 1985).[7] In addition, the athletes completed scales assessing their contextual perceptions of competence (adapted from Losier, Vallerand, & Blais, 1993), autonomy (adapted from Blais & Vallerand, 1992), and relatedness (adapted from Richer & Vallerand, in press). Finally, they completed the Sport Motivation Scale (Brière et al., 1995). Results from a path analysis provided support for the mediating hypothesis (see Figure 3). Autonomy-supportive behavior from the coach facilitated athletes' perceptions of competence, autonomy, and relatedness in basketball. In addition, perceptions of team cohesion led to perceptions of relatedness and autonomy. In turn, perceptions of competence, autonomy, and relatedness had positive effects on their self-determined motivation toward basketball. These basic findings

[7] It is important to note that although students' perceptions of their social agents (instead of actual behavior) were used in this study, recent research (Pelletier & Vallerand, 1996) has shown that students' perceptions of their teachers' behaviors are highly consistent with teachers' perceptions of their own behavior, as well as with independent judges' perceptions of teacher behaviors. Thus, it can be assumed that students' perceptions of their social agents are roughly equivalent to objective contextual variables.

have been replicated in the education context (Guay & Vallerand, in press; Losier et al., 1996; Vallerand et al., in press) and health contexts (Cadorette, Blanchard, & Vallerand, 1996).

Finally, it appears that no study has tested the mediating role of perceptions of competence, autonomy, and relatedness at the global level. Such a study would entail assessing global perceptions of competence, autonomy, and relatedness, and global motivation both before and after individuals are subjected to the presence (or absence, for a control group) of a pervasive global factor (e.g., moving to a nursing home). Then, structural equation perceptions of competence, autonomy, and relatedness. Such a study would complement nicely those presented in this section at the situational and contextual level.

Research reviewed in this section confirmed that perceptions of competence, autonomy, and relatedness mediate the impact of the social environment on motivation, especially at the situational and contextual levels. However, one issue that was not addressed concerns the relative impact of these perceptions on motivation. Which is more likely to impact motivation, competence, autonomy, or relatedness? We would argue that the answer to this question depends on the nature of the task, the conditions in which activities are to be performed, and the individual's needs. Thus, if a task involves working alone and provides inherent competence feedback, it is likely that perceptions of competence will have a more potent impact on motivation than perceptions of relatedness. On the other hand, conditions where team cohesion is encouraged at the expense of individual performance may lead perceptions of relatedness to have a greater impact on motivation than perceptions of competence.

A recent study by Richer and Vallerand (1996a) tested the relative effects of perceptions of competence and relatedness on work motivation, as a function of the individuals' need for relatedness. These researchers reasoned that for individuals with a high need for relatedness (individuals for whom it is important to engage in meaningful relationships at work), perceptions of relatedness at work would prove a stronger determinant of work motivation than perceptions of work competence. On the other hand, for individuals with a low need for relatedness, perceptions of work competence would be a more important predictor of motivation than perceptions of relatedness at work. Richer and Vallerand had adults from different work settings complete scales assessing contextual perceptions of competence (adapted from Losier et al., 1993) and relatedness (Richer & Vallerand, in press) at work and the Blais Work Motivation Inventory (Blais et al., 1993). In addition, participants completed the Need for Relatedness Scale (Richer & Vallerand, 1996b).[8]

[8] The Need for Relatedness Scale (Richer & Vallerand, 1996b) assesses the importance of being accepted by others and of being intimate with them. Participants must indicate the extent to which each of the items is important in their interpersonal relationships with their work colleagues. The stem, "In your relationships with your work colleagues to what extent is it important for you to be . . . ?" is followed by items such as "understood," "close," "related," etc. The scale has been validated in French within the context of work but can be applied to most contexts.

Participants were subdivided at the median on the basis of their scores on the Need for Relatedness Scale. Structural equation modeling analyses using EQS (Bentler, 1992) were conducted separately for each group. The results showed that for individuals high in the need for relatedness, perceptions of relatedness had a significantly higher impact on self-determined work motivation than perceptions of competence. Conversely, for individuals low in the need for relatedness, perceptions of competence had a higher impact on motivation than perceptions of relatedness.

Thus, the Richer and Vallerand (1996a) study showed that the relative impact of perceptions of competence and relatedness on work motivation may vary as a function of the needs of the individual. Future research is needed in order to determine how the relative impact of these psychological mediators is also influenced by the social environment.

C. COROLLARY 3.3: MOTIVATION RESULTS FROM TOP-DOWN EFFECTS FROM MOTIVATION AT THE PROXIMAL LEVEL HIGHER UP IN THE HIERARCHY

The third corollary recognizes the potential top-down impact of motivation at higher levels in the hierarchy on motivation at the next lower level. More specifically, it is proposed that motivation at the proximal level should have stronger effects top-down on motivation at the next lower level than motivation at a distal level. Thus, contextual motivation should have a stronger impact on situational motivation than global motivation. Similarly, global motivation should have an impact on contextual motivation. With respect to the global–contextual motivation relationship, it is posited that one's global or more general motivational orientation will be channeled toward more specific spheres of activity (the contextual level). For instance, one would expect someone with a global intrinsic motivation orientation to display an intrinsic motivational orientation in different contexts, such as education, leisure, and interpersonal relationships. Finally, it is also proposed that self-determined motivation at the higher level will facilitate self-determined levels of motivation at the next level down in the hierarchy. Thus, students who display a self-determined motivational profile (high levels of intrinsic motivation and identified regulation, but low levels of external regulation and amotivation) in contextual motivation toward education are likely to display a similar motivational profile at the situational level in the classroom.

Corollary 3.3 is in line with recent conceptual work on self-regulatory processes, which has shown that global properties of the self influence more specific aspects of the self (Brown, 1993; Brown & Dutton, 1995; Sansone & Harackiewicz, in press). For instance, in several empirical studies, Brown

and Dutton (1995) showed that global self-esteem leads people to believe that they possess several specific social-valued qualities. Similarly, Sansone and Harackiewicz (in press) have posited that higher level purpose goals (why one wants to do the task) may influence lower goals such as why one may want to pursue ("or feel like") engaging in the task.

Only a few studies have tested Corollary 3.3. In one study, Williams, Grow, Freedman, Ryan, and Deci (1996) had severely obese patients complete a global motivation measure, the autonomy subscale of the Generality Causality Orientations Scale (GCOS; Deci & Ryan, 1985b), at the beginning of the study, as well as a contextual measure, the Treatment Self-Regulation Questionnaire, which assessed participants' motivation for participating in a medical program and following its guidelines. This latter questionnaire was completed 5 to 10 weeks after completion of the GCOS. Results from a path analysis revealed that global self-determined motivation (the autonomy orientation) at Time 1 predicted contextual self-determined motivation toward the treatment at Time II. The more self-determined patients' global motivation, the more self-determined was their contextual motivation toward engaging and participating in the treatment.

Other research has assessed the impact of contextual motivation on situational motivation. Thus, in two studies with basketball players, Blanchard, Vallerand, and Provencher (1995) were able to show that contextual motivation toward basketball in general, as assessed either just prior to (Study 1) or several weeks before (Study 2) a game, predicted situational motivation experienced during a basketball game. Here again, the more self-determined the athletes' contextual motivation toward basketball, the more self-determined their situational motivation. Overall, the findings from the Williams, Orow, Freedman, Ryan, and Deci (1996) and the Blanchard et al. (1995) studies indicate that motivation can produce top-down effects on motivation at the next lower level in the hierarchy.

It should be highlighted that situational motivation toward a specific activity (e.g., doing one's homework) should be mainly influenced by contextual motivation and/or situational events that are directly related to this activity (e.g., education) and not so much by nonrelevant contextual motivation (e.g., motivation toward leisure or interpersonal relationships) and irrelevant situational events (e.g., having just failed at a sport event). For instance, a student's intrinsic motivation on a Friday afternoon in class should be mainly influenced by his or her contextual intrinsic motivation toward education in general and not so much by contextual motivation toward leisure activities or interpersonal relationships. The more intrinsic the student's contextual motivation toward education, the more intrinsic his or her situational motivation. Similarly, the student's intrinsic motivation in class at that very moment should be influenced more readily by situational

factors taking place in the classroom rather than by other events unrelated to education, such as having performed badly in a basketball game at lunchtime.

Although this specificity hypothesis may appear obvious, it is nevertheless important because it forces us to consider individuals in a multidimensional fashion in order to better predict and explain their motivation. Situational events do not only happen to people, they are also experienced as more or less related to whatever activity they are doing. When they are more relevant, situational factors should influence situational motivation. Similarly, motivational orientations may not always affect people's current (situational) motivation. It depends on their relevance to the activity being performed. Someone may be highly intrinsically motivated toward leisure activities in general, but this is not likely to help the person enjoy a history lecture on a Friday afternoon. If we want to predict this student's situational motivation for history on that Friday afternoon in class, we need to know about this student's relevant motivational orientation and the situational factors that are in effect in that situation at that time. In that specific situation, this amounts to being able to assess his (or her) contextual motivation toward education and the factors taking place in the classroom at that moment (the topic being discussed, the teacher's behavior, etc.). We hasten to note that we do not negate the potential influence that other contextual motivations and irrelevant situational factors may have on motivation, but such forces should have a lower impact than those directly relevant to the activity being performed.

Chantal, Guay, and Vallerand (1996, Study 1) conducted a study in order to test the specificity hypothesis with respect to the impact of different contextual motivations on situational motivation. College students engaged in a regular academic activity in the classroom for a period of 40 minutes. Following the activity, students were asked to complete scales assessing situational motivation (Guay & Vallerand, 1995, 1997) toward the educational activity, as well as contextual motivation toward leisure (Pelletier et al., in press), education (Vallerand et al., 1989), and interpersonal relationships (Blais et al., 1994). A month later, the same individuals were contacted again and asked to complete the Situational Motivation Scale within 4 hours of having engaged in a leisure activity.

Chantal et al. (1996) then conducted structural equation modeling analyses using LISREL in order to predict situational motivation with respect to the two types of activities. It was hypothesized that when participants were engaged in an academic activity, their situational motivation toward that specific activity would be mainly determined by their contextual motivation toward education. Similarly, when the same participants were engaged in the leisure task, their situational motivation toward that task

should be mainly determined by their contextual motivation toward leisure activities. Using the self-determination index for each of the different contextual motivational measures, Chantal et al. conducted analyses separately for the educational and leisure tasks, Results are presented in Figures 4A and 4B. As can be seen from Figure 4A, results provided support for the model with acceptable fit indices. When participants were involved in an educational task, only contextual motivation toward education had a significant direct effect on situational motivation. The more self-determined the contextual motivation toward education, the more self-determined the student's situational motivation in the classroom. The other contextual motivations did not have any significant effect on situational motivation. In a similar fashion, results with the leisure task revealed that the only significant direct impact came from the contextual motivation toward leisure activities and not from contextual motivation toward education or interpersonal relationships. Here again the model was confirmed.

The findings from the above study have the following implications. First, in order for contextual motivation to influence situational motivation it needs to be directly pertinent to the task being performed. Thus, when one

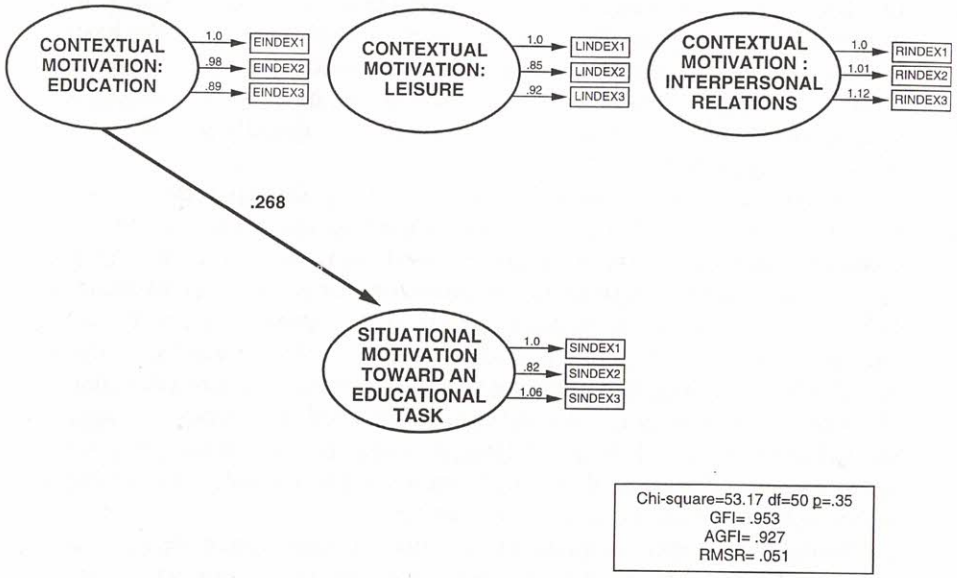

Fig. 4A. A confirmatory test (with LISREL) of the specificity hypothesis of the contextual-situational motivation relation toward an education task. Numbers on the arrows leading to a circle are the fully standardized betas from the LISREL analyses (all values are significant), while those leading to squares are the indices from the measurement model. GFI: Goodness of Fit Index; AGFI: Adjusted Goodness of Fit Index; RMSR: Root Mean Square Residual. (From Chantal, Guay, & Vallerand, 1995, Study 1.)

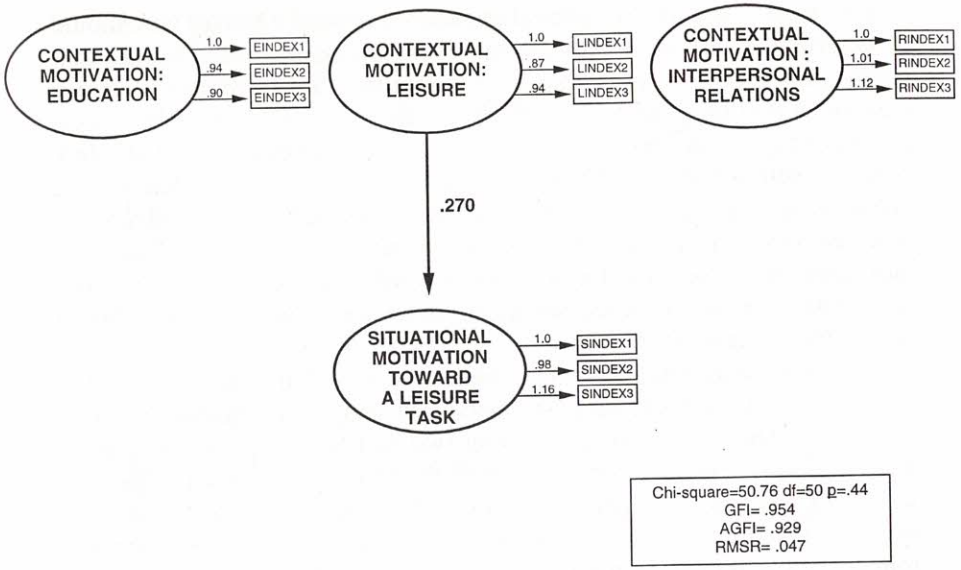

Fig. 4B. A confirmatory test (with LISREL) of the specificity hypothesis of the contextual-situational motivation relation toward a leisure task. Numbers on the arrows leading to a circle are the fully standardized betas from the LISREL analyses (all values are significant), while those leading to squares are the indices from the measurement model. GFI: Goodness of Fit Index; AGFI: Adjusted Goodness of Fit Index; RMSR: Root Mean Square Residual. (From Chantal, Guay, & Vallerand, 1995, Study 1.)

is engaging in an educational activity, it is one's contextual motivation toward education that will influence that person's situational motivation. And when the activity is related to the leisure context, it is motivation toward leisure that becomes relevant and serves to predict situational motivation. Second, in line with Corollary 3.3, the more self-determined one's contextual motivation toward the pertinent activity, the more self-determined one's situational motivation. Finally, it is important to underscore the fact that these were the same participants who engaged in the two different activities. Thus, when they engaged in the two activities, they "brought" with them the same contextual motivations. The fact that one contextual motivation affected situational motivation with respect to one activity but not the other is a rather solid test of the specificity hypothesis.

One question that can be raised with respect to the specificity hypothesis is, What determines the relevance of a given activity for a given context? Or, in terms of the model, What primes the link between situational motivation toward a given activity, and a given contextual motivation? One obvious answer, as demonstrated in the preceding study, is the very content of the

activity itself. Thus, the situational motivation toward a leisure task should be determined, at least in part, by one's contextual motivation toward that given context (i.e., leisure). However, sometimes tasks can be ambiguous enough so that they can be perceived in different ways. In such instances, the way the task is perceived should determine the direction of the link between contextual motivation and situational motivation. That is, if a given task is being perceived as a leisure task, then one's contextual motivation toward leisure should be a more important determinant of situational motivation than contextual motivation toward education. However, if the same task were to be perceived as an educational task, then we should obtain the reverse effect.

This hypothesis was tested by Chantal et al. (1996, Study 2). In that study, French-Canadian college students were presented with a word-association task. This task involved reading two words and proposing a third word that has something in common with the first two. Half the participants were told that this task involved cognitive dimensions to be found in some exercises that are usually performed in French courses (participants' mother tongue). Thus, the intent was for the task to be perceived as an educational task. The other half was told that this activity was in fact a game similar to those that several individuals their age engage in during their leisure hours. Thus, this task should be perceived as pertaining to the leisure context. All participants were also shown the book from which the exercises (or the game) were taken from. In the education condition, participants were shown a French exercise manual ostensibly written by two professors. On the other hand, participants in the leisure condition were shown a game book ostensibly containing different word games. Participants engaged in the task and performed 20 trials. Following completion of the task, participants completed the Situational Motivation Scale (Guay & Vallerand, 1995), as well as the Academic Motivation Scale (Vallerand et al., 1989), and the Leisure Motivation Scale (Pelletier et al., in press). The self-determination index was used for the three motivation measures.

Regression analyses were conducted in order to determine the relative influence of the education and leisure contextual motivations on situational motivation toward the task in each of the two conditions. Results revealed that in the condition where participants were presented the task as being relevant for education, contextual motivation toward education was the only significant determinant of situational motivation (see Figure 5A). The more self-determined the contextual motivation toward education, the more self-determined the situational motivation. On the other hand, when the activity was presented as a leisure activity (see Figure 5B), contextual leisure motivation was the only significant predictor of situational motivation.

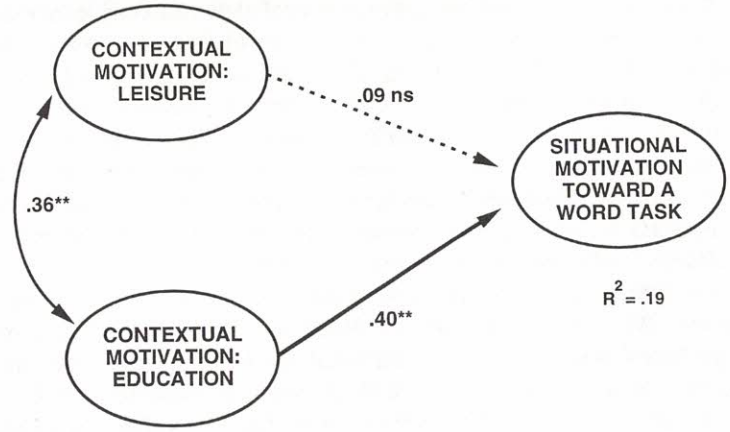

Fig. 5A. On priming the contextual-situational motivation relation: Results from the regression analysis in the education condition. Numbers are the beta weights and R^2 is the percentage of explained variance (**$p < .01$). (From Chantal, Guay, & Vallerand, 1995, Study 2.)

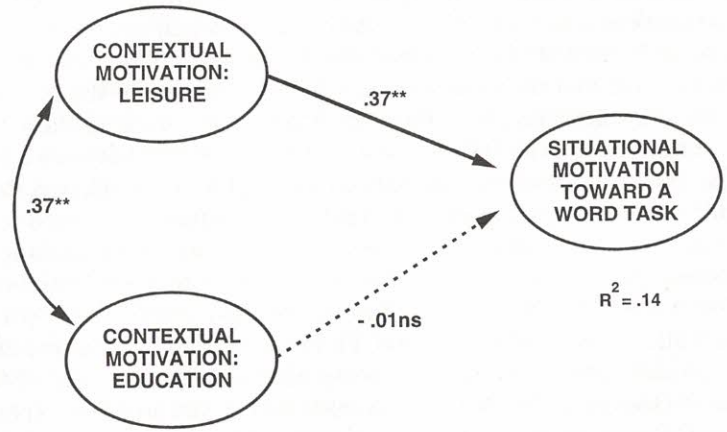

Fig. 5B. On priming the contextual-situational motivation relation: Results from the regression analysis in the leisure condition. Numbers are the beta weights and R^2 is the percentage of explained variance (**$p < .01$). (From Chantal, Guay, & Vallerand, 1995, Study 2.)

The findings from the above studies reveal that not only concrete elements of the task (Chantal et al., 1996, Study 1), but also perceptions of the task (Chantal et al., 1996, Study 2) as being related to a life context (e.g., education or leisure) prime the link between situational motivation and contextual motivation. Furthermore, as expected, when the relevant contextual motivation is self-determined, so is the situational motivation. It would appear important to underscore that in the second study, the very same task was used. Only participants' perceptions of the task were manipulated. When the task was perceived as being a leisure task, the only significant determinant of situational motivation was the leisure contextual motivation. When the task was perceived as educational in nature, the only significant determinant of situational motivation was the contextual motivation toward education. Combined together, these two studies indicate that task factors appear highly important in determining the link that exists between situational motivation toward a task being performed and the contextual motivations of the individual. Person factors may also play a role in influencing the contextual–situational motivation link. For instance, a given life context (e.g., work) may be so important for some people that they will perceive most activities to be performed in light of that sole context. Future research needs to look at individual-difference factors in order to determine how they may prime the contextual-situational motivation relationships.

Although it is hypothesized that in most instances the top-down effect should occur between motivation at adjacent levels, there are circumstances that may lead motivation at the global level to have an impact on motivation at the situational level. This should mainly occur when situational factors are weak and when there is no perceived relationship between the task being performed and the various contextual motivations of the individual. One particular study illustrates this point (Maddi, Hoover, & Kobasa, 1982). In this study, Maddi et al. (1982) assessed the relationship between a global construct akin to amotivation (alienation) and exploratory behavior. Participants arrived at the laboratory, were seated at an office, and asked to wait for 10 minutes presumably because testing procedures were running late. This waiting period was actually used to assess participants' exploratory behavior. They had the possibility to explore their environment (to look around, walk, or manipulate objects). Following the 10-minute free-choice period, participants were asked to complete the alienation test (Maddi, Kobasa, & Hoover, 1979). Results revealed that global amotivation (alienation) was significantly and negatively correlated ($r = -.48$) with exploratory behavior. The more participants were globally amotivated, the less they explored their environment. Findings from the Maddi et al. study thus indicate that in the absence of strong situational factors, and with a nebulous task (to wait for the experimenter), there is room for global motivation to affect situational motivation.

Important to highlight is the fact that the top-down effects of motivation higher in the hierarchy on motivation at the next level down in the hierarchy may be altered by contextual and situational factors. At least two elements need to be considered. The first is the channeling effect of the social environment. That is, the environment largely dictates where one's global motivation may be invested. For instance, children raised in homes where music is relatively absent are less likely to have their global motivational orientation channeled into music than children whose parents are musicians. A recent study by Peterson and Stewart (1996), although not dealing with intrinsic and extrinsic motivation per se, nevertheless exemplifies this point nicely. The authors assessed generativity motivation (the desire to contribute to the welfare of society) through a semiprojective measure. Participants who were midlife women were also asked to indicate gratifications that took place in several life contexts including parenting, work (if applicable), and political activity. Results revealed that generative women (those with high levels of global generativity motivation) with careers found gratification through work, whereas generative women not working in careers experienced gratification through parenting. Thus, these findings suggest that by providing different contextual opportunities, a social environment can channel global motivation toward different spheres of activities.

The second influence from the social environment is that social factors can modulate the top-down effect. More specifically, social factors can augment, thwart, or even block the top-down effect. Thus, in their study on obesity, Williams et al. (1996) also found that one contextual factor, namely autonomy support from the medical staff, had positive augmenting effects on contextual motivation toward treatment very much in line with those of the global autonomy orientation of the patient. Similar findings were reported at the situational level by Blanchard and Vallerand (1996a, Study 1), who showed that positive situational assessments of individual and team performance yielded positive effects on situational motivation in a basketball game.

Social factors may also moderate the impact of contextual motivation on situational motivation. For instance, in the Boggiano and Barrett (1985) study, students who were selected on the basis of their high or low contextual intrinsic motivation toward education (using Harter's [1981] Intrinsic/Extrinsic Orientation Inventory) were randomly assigned to success or failure conditions on an educational task. Following task engagement, and the experience of success or failure, situational intrinsic motivation was assessed through the free-choice measure. Results revealed the presence of a statistical interaction. Following success, the situational intrinsic motivation of

low and high contextual intrinsic motivation participants did not differ. However, following failure, high contextual intrinsic motivation participants displayed significantly higher levels of situational intrinsic motivation than low contextual intrinsic motivation participants, presumably because the former individuals may have perceived failure as a challenge opportunity (Boggiano & Barrett, 1985). Other studies (e.g., Loveland & Olley, 1979; McLoyd, 1979) have also found that certain situational factors moderate the impact of contextual motivation on situational motivation. Additional research is needed in order to better understand the synergy between motivation at higher levels in the hierarchy and social factors at the next lower level and how such an interplay of social and personal forces may influence motivation.

In sum, research reviewed in this section strongly supports Postulate 3 and its corollaries. It may prove quite heuristic to distinguish between global, contextual, and situational factors. In addition, the role of perceptions of competence, autonomy, and relatedness as psychological mediators of the social factors-motivation relationship was strongly supported, especially at the situational and contextual levels. Also shown was that motivation at a higher level in the hierarchy can influence motivation at the next lower level. Finally, task relevance is a key element in determining the influence of contextual motivation on situational motivation.

VI. Postulate 4: There Is a Recursive Bottom-up Relationship between Motivation at a Given Level and Motivation at the Next Higher Level in the Hierarchy

We have seen with Corollary 3.3 that motivation can have top-down effects on motivation at the next level down in the hierarchy. Postulate 4 suggests that motivation can also have recursive effects from a lower level in the hierarchy to motivation at the next level up in the hierarchy, underscoring the bidirectional relationship between motivation at adjacent levels in the hierarchy. The purpose of this postulate is to specifically take into consideration motivational changes that may occur over time, and how the interplay between motivation at different levels of the hierarchy can account for such changes. For instance, it would be expected that repeatedly experiencing intrinsic motivation at the situational level on educational activities (perhaps due to repeated success experiences) should eventually lead to the development of a contextual intrinsic motivation toward education. This may explain why John's contextual motivation toward education in our introductory example was becoming more self-determined. Repeated

experiences of intrinsic motivation like the one he had in the English class may produce recursive positive effects on his contextual motivation toward education. In a similar fashion, nurturing self-determined motivation in several life contexts, or at least in a few meaningful ones, should have recursive positive effects on global motivation.

This reasoning on the recursive or bottom-up effects is in line with much theorizing in the developmental literature (e.g., Harter, 1985) that suggests that more specific and unstable elements of the self contribute on a temporal basis to broader and more stable self-conceptions. For instance, it is expected that behavior emitted in various situations are contextualized and are eventually perceived by children as describing them in specific areas. Thus, positive experiences in specific settings might lead children to eventually say: "I'm good at sports," and "I'm good at school." Over time, such specific self-conceptions will contribute to general self-esteem (Harter, 1985). We believe that the same reasoning applies to motivation. Bottom-up effects from situational to contextualized to global motivations can and do occur, and are most likely to take place when individuals start to question their motivation toward a given context. In such instances, when individuals start feeling uncertain (e.g., Swann, 1983) about their motivation, they may be ripe to undergo an unfreezing of their beliefs about their motivation (Kruglanski, 1989). The outcome may be a change in contextualized, or even global, motivation.

In order to illustrate more clearly this bidirectional effect, let's take a real-life example of a basketball player who participated in the quarter-finals of a high school basketball tournament. As the leading scorer of the team, the player had to deliver a great performance for his team to have a chance to win the game. Unfortunately, he did not deliver, scored only 16 points, and his team lost by 22 points. Near the end of the game with the team's loss certain, his situational motivation was at its lowest. He did not feel like playing at that moment: he was amotivated. Later that evening he could not stop thinking about the game and the fact that he did not feel like playing anymore toward the end of the game. He started to think about next season's grueling training camp and boring practices. Then, for the first time in his life, he started wondering if basketball was worth the time investment. Perhaps he had obtained all there was to get from the game. Perhaps it was time to move on. And he did. For several weeks. Until friends started to ask him to come and scrimmage, just for the fun of it. When he did, the fun came back. He resumed playing basketball, played the following season, and went on to play at the college and university levels.

How can we explain what this basketball player went through? Let's start by explaining his situational motivation during the crucial quarter-final game. He did not play well and his team lost. These represent two

crucial situational factors that had a negative impact on his situational motivation (Corollary 3.1). These factors were so strong that they superseded the impact of the player's intrinsic contextual motivation on his situational motivation and led him to experience a low level of intrinsic motivation and a high level of amotivation at the situational level (near the end of the game). In turn, this low self-determined situational motivation had a recursive negative effect (Postulate 4) on his contextual motivation toward basketball. With his contextual motivation now being strongly amotivated, the player decided to call it quits . . . until several weeks (and many negative thoughts) later when friends asked him to play. The player went on to scrimmage with his friends and experienced feelings of relatedness and competence that led him to experience intrinsic motivation at the situational level again (Corollary 3.2). After having experienced intrinsic motivation at the situational level on a repeated basis, his intrinsic contextual motivation toward basketball came back (Postulate 4), leading him to resume his basketball career (an important behavioral consequence as we will see with Postulate 5).

In a recent study, we (Blanchard et al., 1995, Study 1) have tried to capture some of the elements observed with the basketball player described above during a preseason basketball tournament. We selected a preseason basketball tournament because the importance of the event is likely to provide greater weight to the situational factors, thus leading to strong effects on situational motivation. In addition, a preseason tournament represents a crucial point of the season where most players are likely to entertain questions about their ability (e.g., "Will I be good enough to make the starting five?"). This leaves room for the unfreezing of beliefs (Kruglanski, 1989) and for potential changes in one's contextual motivation toward basketball that would follow players' changes in situational motivation.

Blanchard et al. assessed athletes' contextual motivation (through the Sport Motivation Scale; Brière et al., 1995) before the first and second game of the tournament, as well as 10 days after the tournament. In addition, the player's situational motivation (through the Situational Motivation Scale; Guay & Vallerand, 1995) was assessed immediately after each of the two games, and so were athletes' perceptions of personal and collective performance (through scales adapted from Vallerand & Richer, 1988). Finally, we recorded the outcome (win/loss) of each game and derived a team performance score by transforming into z-scores the subjective (collective) and objective (win–loss) performance variables and by summing the two measures. We conducted a path analysis on the data (using again the self-determination index as a motivation score) in order to test for the impact of contextual motivation (Corollary 3.3) and situational

factors (personal and team performance; Corollary 3.1) on situational motivation, as well as the recursive effects of situational motivation on contextual motivation toward basketball (Postulate 4). Results from the path analysis, depicted in Figure 6, supported the hypothesis. Contextual motivation toward basketball in general and personal and team performance influenced situational motivation assessed immediately after the first game, that in turn influenced subsequent contextual motivation before game 2. This cycle was again repeated for game 2. Finally, situational motivation after game 2 (and 1) had an impact on players' contextual motivation toward basketball 10 days following the tournament. The more self-determined the athletes' situational motivation during the tournament, the more self-determined their contextual motivation toward basketball 10 days after the tournament. These findings were replicated in a subsequent study by Blanchard et al. (1995, Study 2), which followed basketball players over an entire season.

The findings from the Blanchard et al. studies are important because they show the existence of a recursive effect from situational motivation to contextual motivation on a temporal basis. Thus, one's immediate experiences during engagement in a given activity can have more than short-term

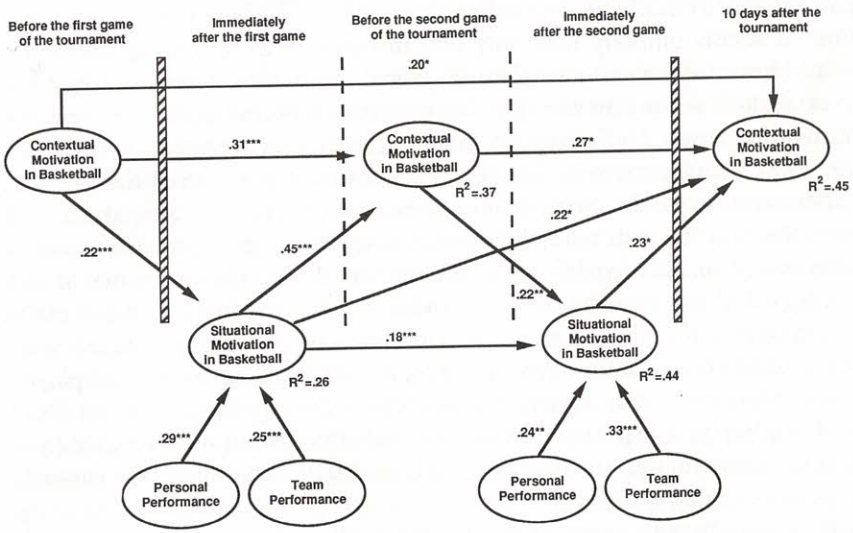

Fig. 6. On the bidirectional relations between situational and contextual motivation during a basketball tournament: Results from the path analysis. Numbers are the beta weights and R^2 is the percentage of explained variance (*$p < .10$, **$p < .01$, ***$p < .001$). (From Blanchard, Vallerand, & Provencher, 1995, Study 1.)

effects on one's motivation toward a broad set of activities. These findings also provide additional support for the effects of situational factors (Corollary 3.1) and contextual motivation (Corollary 3.3) on situational motivation.

The present perspective also provides a basis for interpreting the findings of two recent studies (Enzle, Wright, & Redondo, 1996) where it was shown that the impact of situational factors on situational intrinsic motivation toward a first activity was later generalized toward a second related activity. In two studies participants performed a visual-spatial activity (a switch-light device that allows one to make different designs) under either autonomy-supportive conditions or externally controlling conditions. Following participation in the first activity, participants were allowed to participate in a second visual-spatial activity (Lego® blocks). The results showed that when participants engaged in the first activity under autonomy-supportive conditions, they displayed higher levels of intrinsic motivation (as assessed by the time spent on the activity) on the second activity (the Lego® blocks) than when they engaged in the first activity under externally controlling conditions.

The authors explained such cross-task generalization by suggesting that the experience of autonomy and intrinsic motivation in the first activity may have generalized to the trait of self-determination that later allowed participants to tackle the second activity with high levels of intrinsic motivation. It seems unlikely that only one instance of experiencing autonomy would have influenced participants' global motivational orientation; however, it does seem possible that the experience of autonomy and intrinsic motivation toward a first visual-spatial activity may have generalized to a context of such activities. Because participants were told initially by the experimenter that they would potentially engage in two visual-spatial activities, the second task was characterized as being part of such types of activities. Thus, the experience of intrinsic motivation toward a first visual-spatial activity influenced their contextual motivation toward such types of activities that in turn had an impact on their situational motivation toward the second visual-spatial activity. Thus, in line with the basketball players in the Blanchard et al. study, it appears that the participants in the Enzle et al. studies have experienced bidirectional effects from situational motivation to contextual motivation and back to situational motivation toward a second but related activity.

It is also hypothesized that the above reasoning with respect to the interplay between contextual and situational motivation can occur at the next higher level in the hierarchy, that is, between contextual and global motivation. For example, if individuals consistently experience high levels

of intrinsic motivation in education, interpersonal relationships, and leisure contexts, eventually such high levels of intrinsic motivation should have a recursive impact on their intrinsic motivation at the global level. This line of thinking has been recently tested by Haddad, Pelletier, and Bazana (1995), who found that contextual motivation toward education, leisure, and interpersonal relationships accounted for over 50% of the variance in global motivation. Here again, the more self-determined the contextual motivations, the more self-determined participants' global motivation.

In sum, research reviewed in this section provides support for Postulate 4. Motivation at lower levels can have bottom-up recursive effects on motivation at higher levels in the hierarchy. In addition, it has been shown that together, Postulates 3 and 4 can help explain changes in motivation at the contextual level that may occur over time. Although there was some evidence to the effect that the same processes may also take place with respect to global motivation (Haddad et al., 1995), additional research is needed to more fully test how global motivation may eventually change over time.

VII. Postulate 5: Motivation Leads to Important Consequences

Over the years, a sizable portion of intrinsic and extrinsic motivation studies have related motivation to various types of outcomes. The fifth and last postulate posits that motivation actually produces those consequences. Although some readers may object to the use of the term *consequences,* it is intuitively appealing to construe variables as diverse as attention, satisfaction, and behavioral persistence as being influenced by motivation. For instance, an intrinsically motivated reader should be more attentive while reading than one who is amotivated. Further, from an empirical perspective, there is evidence that motivation actually "causes" the consequences mentioned previously. Of importance are the results of three series of studies that have experimentally induced intrinsic or extrinsic motivation in participants and have assessed the ensuing consequences on a host of variables. A first series of studies showed that creating a condition of intrinsic motivation leads to greater levels of creativity than inducing extrinsic motivation (e.g., Amabile, 1985; Hennessey, 1989). In the Amabile (1985) study, young adults involved in creative writing were asked to write one poem, and then, before writing a second poem, they were assigned to conditions of situational intrinsic, extrinsic, or control conditions; partici-

pants in the intrinsic condition completed a questionnaire that focused on intrinsic reasons for being involved in writing; participants in the extrinsic (external regulation) condition completed a questionnaire that focused on extrinsic reasons. Participants in the control condition did not receive a questionnnaire [Research by Salancik (1975) and Seligman, Fazio, and Zanna (1980) has shown that such procedures actually affect motivation as intended]. Although there were no differences among the three conditions on the creativity of the first poem (written before the manipulation), there were significant differences in the creativity of the second poem (written after the manipulation). Results revealed that poems written by participants who were experiencing situational extrinsic motivation were judged by experts as less creative than poems written in the other conditions. Because of its experimental controls, the Amabile study provides strong support for Postulate 5.

Similar findings have been obtained in two other sets of experiments on motivational consequences. In one, Lepper and his colleagues (Lepper & Cordova, 1992; Parker & Lepper, 1992; see Lepper, 1994, for a review) showed that by embellishing educational instructions through fantasy it is possible to produce higher levels of situational intrinsic motivation that, in turn, lead to higher levels of learning toward different subjects (math, physics, etc.). Finally, it was also demonstrated that experimental programs that induce either intrinsic motivation or identified regulation to stop smoking lead to greater abstinence than other programs that encourage external regulation (such as using financial incentives) to stop smoking (Curry, Wagner, & Grothaus, 1991; Harackiewicz, Sansone, Blair, Epstein, & Manderlink, 1987). Thus, overall, it is clear that motivation produces consequences.

It would also appear useful to conceive of consequences as being cognitive, affective, and behavioral in nature. Concentration or attention (Vallerand et al., 1989), and memory and conceptual learning (Benware & Deci, 1984; Grolnick & Ryan, 1987; McGraw, 1978) are examples of cognitive consequences that have been studied in the intrinsic–extrinsic motivation literature. Affective consequences have been particularly popular and include interest (e.g., Koestner, Ryan, Bernieri, & Holt, 1984), positive emotions (Ryan & Connell, 1989), satisfaction (Deci, Connell, & Ryan, 1989; Vallerand & Bissonnette, 1990; Vallerand et al., 1989, 1993), and anxiety (Gottfried, 1985; Ryan & Connell, 1989). Finally, choice of behavior (e.g., Swann & Pittman, 1977), persistence at the task (e.g., Deci, 1971; Vallerand & Bissonnette, 1992), intensity (Harter, 1978), complexity (Pittman, Emery, & Boggiano, 1982), behavioral intentions (e.g., Kruglanski, Friedman, & Zeevi, 1971; Vallerand et al., in press), and performance (e.g., Fortier et al., 1995b; Guay & Vallerand, in press; Harter & Connell, 1984) represent examples of behavioral consequences that have been studied in the area. Recent research (Guay & Vallerand, 1995, Study 2; Miserandino, 1996) has also shown that the three types of consequences can be distinguished within the confines of the same study.

Clearly, positing that consequences can be of the three types mentioned above is not a new contribution. Such a tripartite division of human experience has long been accepted in psychology (e.g., Hilgard, 1987), but it would appear especially important to distinguish between the three classes of consequences with respect to their relations to motivation. First, as detailed in section III.C, doing so may help clarify confusion that seems to exist in this area. Considering behavior, for instance, as a motivational consequence rather than motivation itself allows us to unconfound the two contructs. Furthermore, it opens new research avenues such as attempting to determine when motivation will primarily affect behavior, emotions, and thoughts.

A second reason for distinguishing the three types of consequences is that such a distinction allows one to test which types of motivation will most strongly affect which types of consequences. By distinguishing between the three types of consequences, it may eventually become possible to chart the motivation–consequences relationship more precisely. Such an enterprise should take into consideration the situation or the context in which individuals interact. This is because it is possible that certain types of motivation lead to different consequences depending on the very situation or context in which they operate. For example, it might be that situational external regulation will not lead to behavior or to other consequences in a free-choice situation. Indeed, why would anyone engage in an uninteresting activity if he or she does not have to? However, external regulation might lead to adaptive behavior (i.e., behavioral engagement) in a highly pressured situation (because the person feels that he or she has to do the activity), but also to negative cognitive (e.g., poor concentration) and affective (e.g., anxiety) consequences. Thus, the three types of consequences may at times be negatively correlated (Ryan, Koestner, & Deci, 1991) depending on the situation. Similarly, the three types of consequences may correlate differently as a function of the individuals' motivation. For instance, Koestner, Bernieri, and Zuckerman (1994) have shown that individuals with a global autonomous (or self-determined) motivation display more coherence between their affect and behavior than individuals with global control (or external regulation) motivation. It would therefore prove useful to distinguish among the cognitive, affective, and behavioral consequences as different predictions can be made depending on the characteristics of the individual and the situation. Postulate 5 is subdivided into two corollaries. These appear below.

A. COROLLARY 5.1: CONSEQUENCES ARE DECREASINGLY POSITIVE FROM INTRINSIC MOTIVATION TO AMOTIVATION

Corollary 5.1. deals with the quality of the consequences as a function of the type of motivation. Given that behavior can be intrinsically, extrinsically, or amotivated, what are the consequences of these kinds of motivation for everyday life and well-being? Because intrinsic motivation, and integrated, identified, introjected, and external regulation, and amotivation are hypothesized to lie on a continuum from high to low self-determination (Deci & Ryan, 1985a), and because self-determination is associated with enhanced psychological functioning (Deci, 1980; Ryan, Deci, & Grolnick, 1995), one would expect a corresponding pattern of consequences. That is, one might expect intrinsic motivation to have the most positive consequences, followed by integrated and identified regulation. On the other hand, one might also expect introjected, but especially external regulation and amotivation to be associated with negative consequences.

Very few studies have assessed the relationship between outcomes and the whole spectrum of motivations at the situational and global levels. In one study at the situational level, Guay and Vallerand (1995, Study 1) found that the different motivations assessed by the Situational Motivation Scale were correlated as expected with cognitive (i.e., concentration) and behavioral outcomes (behavioral intentions to pursue engagement in the activity). For instance, with behavioral intentions, the correlations were the following: intrinsic motivation (.56), identified regulation (.47), external regulation (−.29), and amotivation (−.46). We know of no research that has specifically looked at the relationships between the different types of motivation and outcomes at the global level per se. However, using the Elderly Motivation Scale, which may serve as a proxy to a global motivational measure, especially in nursing homes, Vallerand and O'Connor (1989) reported results in line with those of the Guay and Vallerand (1995, Study 1) with various indices of psychological adjustment such as life satisfaction, locus of desired control, and meaning in life. In addition, as expected, the reverse pattern was obtained with negative outcomes such as depression. These findings have been replicated with a different sample of elderly individuals (Vallerand et al., 1995).

The adaptive consequences of various types of motivation have been primarily examined at the contextual level, in a variety of life contexts, including education, sports, the workplace, interpersonal relationships, leisure activities, religion, and health (see Ryan, 1995; Vallerand, 1993; Vallerand & Reid, 1990, for reviews). Here again, such research generally

provides support for Corollary 5.1. A study by Blais et al. (1990) illustrates this pattern of results with respect to couple happiness. In this study, 63 heterosexual couples completed a series of questionnaires assessing motivation toward couple relationship, various adaptive and nonadaptive behaviors in their relationship, as well as their level of couple happiness. The scales included the Couple Motivation Questionnaire (developed for this study), Dyadic Adjustment (Spanier, 1976), the Potential Problem Checklist (Patterson, 1976), the Marital Ways of Coping Questionnaire (Fleishman, 1984) of which two dimensions were used; positive comparisons (e.g., "How do you compare your marriage to that of most other people like yourself?") and passive acceptance (e.g., "How often do you wait for time to remedy the difficulty?"), and finally the Marital Happiness Scale (Azrin, Naster, & Jones, 1973). The authors calculated the correlations between the scales from the Couple Motivation Questionnaires and those assessing different aspects of the quality of couples' relationships. It was expected that in decreasing order, the most positive correlations would be obtained with intrinsic motivation, and integrated and identified regulation, whereas the most negative correlations would be obtained with amotivation, and external and introjected regulation. This pattern of results was expected for all outcome variables except for passive acceptance, which is a negative consequence and thus correlations should be reversed, with the highest negative correlation obtained with intrinsic motivation and the most positive one with amotivation, and so on.

Results appear in Table IV. As can be seen, the hypotheses were supported. It is also noteworthy that all three self-determined forms of motivation (intrinsic motivation and integrated and identified regulation) showed positive relationships with the positive aspects of couples' relationship, whereas introjected and external regulation and amotivation showed negative relationships with such behaviors. These findings underscore the fact that these three types of motivation represent non-self-determined forms of motivation. As expected, the reverse pattern of correlations was obtained with the negative outcome of passive acceptance.

The findings of the Blais et al. study, that show that self-determined forms of motivation (intrinsic, integrated, and identified motivations) lead to successful adaptation, whereas non-self-determined forms of motivation (introjected and external regulation, and amotivation) do not, have been replicated at the contextual level with a variety of consequences such as concentration, cognitive flexibility, positive affect, educational, relational, and leisure satisfaction, persistence, performance, conceptual learning, meaningful relationships, and others (see Ryan, 1995; Vallerand, 1993, for reviews). Furthermore, such findings have been obtained with a diversity of populations including children (e.g., Ryan & Connell, 1989), teenagers (e.g., Vallerand

TABLE IV

CORRELATIONS BETWEEN THE COUPLE MOTIVATION SCALE AND DIFFERENT RELATIONSHIP CONSEQUENCES[a]

Scale	Intrinsic motivation	Integrated regulation	Identified regulation	Introjected regulation	External regulation	Amotivation
Dyadic Adjustment	.43***	.23***	.26***	−.30***	−.30***	−.47***
Potential Problems Checklist	.47***	.25**	.22**	−.23**	−.25**	−.49***
Positive Comparison	.45***	.23**	.13	−.11	−.26**	−.55***
Passive Acceptance	−.35***	−.16*	−.17*	.12	.23**	.35***
Marital Happiness	.40***	.18*	.17*	−.25**	−.25**	−.49***

* $p < .05$; ** $p < .01$; *** $p < .001$.

[a] Adapted from Blais, Sabourin, Boucher, and Vallerand (1990).

et al., in press), young adults (e.g., Vallerand et al., 1993), mature adults (e.g., Blais et al., 1990), and the elderly (e.g., Vallerand & O'Connor, 1989; Vallerand et al., 1995). Thus, these findings appear to be very robust.[9]

Finally, some research at the contextual level (e.g., Koestner et al., 1996; O'Connor & Vallerand, 1990; Ryan, Rigby, & King, 1993) has focused on the relative effects of two types of internalized extrinsic motivation, namely identified and introjected regulation. The theoretical interest in contrasting the consequences of these two forms of motivation is that they both are forms of internal motivation that are not intrinsic. If self-determination theory (Deci & Ryan, 1985a, 1991) is correct, internalized forms of motivation can be either self-determined (i.e., identified regulation) or non-self-determined (i.e., introjected regulation). Results indicating that these two forms of motivation lead to different outcomes would underscore the importance of distinguishing different types of internalized motivation. In line with the theoretical and empirical support presented above, research shows that identified regulation leads to adaptive outcomes, whereas introjection does not. For instance, in two studies in the context of politics dealing with Canadian voters' motivations and behaviors during the 1992 Constitutional Referendum and the 1993 federal election, Koestner et al. (1996) found that identified regulation was associated with actively seeking information about political events, possessing a complex set of political attitudes, and being more likely to actually vote. On the other hand, introjected regulation was associated with relying on the influence of important others, experiencing conflicted emotions about political outcomes, and being vulnerable to persuasion. Other research (O'Connor & Vallerand, 1990; Ryan et al., 1993) has also shown a similar pattern of findings within the context of religion. Overall, these findings support self-determination theory on the importance of distinguishing between different types of "internal" extrinsic motivation.

In sum, research reviewed in this section provides support for Corollary 5.1 that posits the presence of a continuum of consequences as a function of the different types of motivation. It does appear that the most positive consequences are engendered by self-determined forms of motivation (in-

[9] Although the overall bulk of research on the effects of motivation on consequences reveals that intrinsic motivation leads to the most positive outcomes, there have been exceptions. Identified regulation at times has been found to lead to more positive consequences than intrinsic motivation (e.g., Koestner et al., 1996; Pelletier et al., 1996). Although it is too early to make a clear statement as to why this is the case, one potential explanation may have to do with the task. It appears that when the task is typically perceived as not interesting, then identified regulation may become a more important determinant of positive consequences than intrinsic motivation. Such findings have been obtained in the contexts of politics (Koestner et al., 1996) and the protection of the environment (Pelletier et al., 1996). Future research is needed in order to replicate these findings and better understand when and why identified regulation may prove to be a more potent source of positive consequences than intrinsic motivation.

trinsic motivation and integrated and identified regulation), whereas the most negative types of consequences are induced especially by amotivation and external regulation, but also by introjected regulation. Much of this research has been conducted at the contextual level, however. Thus, additional research is needed at the situational and global levels in order to complement the present empirical base.

B. COROLLARY 5.2: MOTIVATIONAL CONSEQUENCES EXIST AT THE THREE LEVELS OF THE HIERARCHY AND THE DEGREE OF GENERALITY OF THE CONSEQUENCES DEPENDS ON THE LEVEL OF THE MOTIVATION THAT HAS PRODUCED THEM

This second corollary deals with the degree of generality of the consequences. It proposes that motivational consequences exist at the three levels (global, contextual, and situational) of the hierarchy (see the right-hand side of Figure 1). The degree of generality of the various consequences depends on the level of motivation that engenders them. Similar analyses have been made in the attitude literature (Ajzen & Fishbein, 1977); for instance, where it has been shown that in order to predict behavior well, attitude must be measured at the same level of generality as behavior. Thus, consequences of situational motivation should be experienced at the situational level—for example, feelings of satisfaction, levels of attention, and persistence for a particular task at a specific time. Similarly, consequences at the contextual level will be of moderate generality, will relate to the different life contexts (e.g., education, interpersonal relationships, and leisure activities), and will be specific to the context to which it pertains. Finally, consequences at the global level will have the greatest degree of generality (e.g., life satisfaction) and will vary as a function of global motivation.

Corollary 5.2 is important because it posits that it is not motivation per se that leads to various outcomes, but rather motivation at the appropriate level of generality in line with the outcomes to be predicted. This corollary thus forces researchers to pay attention to both conceptual and methodological issues in conducting their research. Thus, from a conceptual perspective, researchers need to determine the level of generality of the outcomes they seek to predict. Then, methodologically, they need to choose outcome and motivational scales at the appropriate (and same) level of generality. Failing to do so may lead to weaker motivational effects than should be obtained.

Much research provides indirect support for Corollary 5.2 by providing strong within-level relations. For instance, at the global level, Deci and Ryan (1985b) have shown that the autonomy orientation of the GCOS is negatively related to levels of external locus of control, self-derogation, depression, and anxiety, but is positively related to levels of self-esteem, whereas the impersonal orientation is negatively related to self-esteem but positively related to the above outcomes. Similarly, research at the contextual level has shown that self-determined forms of motivation toward education are positively related to a host of educational outcomes such as attention, positive affect, interest, and satisfaction toward education (see Ryan & Connell, 1989; Vallerand et al., 1989, 1993). Similar findings have been obtained in the interpersonal relationships (Blais et al., 1990, 1994) and leisure contexts (Pelletier et al., 1995). Finally, parallel findings have also been obtained at the situational level, where it has been found that self-determined forms of motivation are positively related to situational measures of attention, positive affect, and intentions of behavioral persistence (Guay & Vallerand, 1995; see also Deci & Ryan, 1987).

It is important however to underscore the fact that the above findings only provide indirect support for Corollary 5.2 because in each of these studies motivation and outcomes were only assessed at one level of generality. In order to provide more direct support for Corollary 5.2, research is needed where motivation and outcomes are assessed at multiple levels of generality. It would then be possible to conduct comparative analyses to determine the validity of Corollary 5.2. Results from two recent pilot studies (Vallerand, 1996c,d) meet these requirements. In the first pilot study (Vallerand, 1996c), situational and contextual (leisure) motivation, as well as situational consequences (levels of concentration, feelings of interest toward a task, and behavioral intentions of persistence) were assessed following participation in an activity described as being a leisure task. Results from a path analysis revealed that situational motivation was more strongly related to the situational consequences than contextual motivation, even though the contextual motivation assessed was directly related to the task being performed (a leisure task). In the second pilot study (Vallerand, 1996d), college students completed scales assessing motivation toward three life contexts (education, interpersonal relationships, and leisure) and global motivation. In addition, satisfaction toward the three life contexts and toward life in general were assessed. Results revealed that life satisfaction was more strongly related to global motivation than to contextual motivation. On the other hand, the relevant contextual motivations were much more related to satisfaction in their particular life contexts than to life satisfaction. It thus seems that there is preliminary evidence for Corollary 5.2.

We also propose a specificity hypothesis with respect to consequences. Thus, outcomes experienced in one specific context should generally result from motivation in that particular context and not from another context. For instance, satisfaction toward school should be a function of school motivation and not leisure or interpersonal relationship motivation. As indicated earlier, much research now supports the hypothesis that motiva-

tion toward a specific context (e.g., interpersonal relationships) influences outcomes in that same context (e.g., satisfaction toward interpersonal relationships). However, very little research has tested this specificity hypothesis with respect to the relative influence of different contextual motivations on consequences pertaining to different contexts.

It should be underscored that there is empirical support for this specificity effect with respect to different aspects of the self and outcomes. For instance, Roberts and Donahue (1994) assessed participants' levels of positive affect with respect to different conceptions of the self, namely marriage and work. In addition, general conceptions of the self were also assessed. They also measured levels of satisfaction toward marriage and work. Results revealed that self-conceptions specifically related to a given life context (i.e., marriage) were more strongly related to satisfaction toward that specific context (e.g., marital satisfaction) than with other aspects of the self, including general self-perceptions. It thus appears, that contextual outcomes are related to contextually relevant conceptions of the self.

The Roberts and Donahue (1994) study revealed that there is specificity with respect to self-perceptions and outcomes. In line with those findings, the Vallerand (1996d) pilot study discussed earlier did find that contextual motivations toward education, interpersonal relationships, and leisure were related more strongly to satisfaction toward each of the specific contexts. In addition, global motivation was more strongly related to life satisfaction in general. In a more elaborate study, Chantal, Guay, and Vallerand (1995) measured motivation toward two life contexts (education and interpersonal relationships), as well as global motivation, and various contextual outcomes pertaining to these two domains. College students completed the Global Motivation Scale (Guay et al., 1996), as well as the Academic Motivation Scale (Vallerand et al., 1989), and the Interpersonal Motivation Inventory (Blais et al., 1994) at time 1. Five weeks later, participants were asked to complete scales assessing educational (cognitive strategy utilization and academic satisfaction) and relational (loneliness and quality of relationships) consequences.

It was hypothesized that global motivation would affect each type of contextual motivation, which in turn would influence their respective sets of outcomes. A model was thus proposed where the more self-determined the global motivation, the more self-determined participants' contextual motivations toward education and interpersonal relationships. In turn, the more participants' motivation toward education is self-determined, the more they utilize cognitive strategies, and in turn, the more academic satisfaction they experience. Similarly, the more participants' motivation toward their interpersonal relationships is self-determined, the more they feel that they have quality relationships and, in turn, the less they feel lonely. Chantal et al. (1995) performed structural equation modeling analyses, using LISREL, to test this model. Results, presented in Figure 7, supported the hypothesis. It was shown that contextual motivation in education was a better predictor of educational consequences than either global motivation or contextual motivation in interpersonal relationships. Similarly, contextual motivation toward interpersonal relationships was a better predictor of relational consequences than motivation toward education or global motivation. In line with Corollary 3.3 (on the top-down effects) it was also found that the more self-determined global motivation, the more self-determined the motivations in education and in interpersonal relationships. Finally, alternative models were tested and were found to be less satisfactory than the present model.

In sum, Postulate 5 and its associated corollaries reveal that motivation is particularly important in the lives of individuals, in large part because it leads to important consequences. Such consequences can be cognitive, affective, and behavioral in nature and take place at three levels of generality in line with the motivation that produces them. In addition, consequences are decreasingly positive as we move from intrinsic motivation to amotivation. Finally, support for a specificity effect was obtained where motivation at a given level of the hierarchy was found to lead to consequences only specific to that level.

VIII. Integrative Studies

Thus far, in this chapter we have reviewed evidence that pertained to each of the different postulates and corollaries of the model. However, some studies have conducted an integrative analysis of motivational determinants and consequences that involves more than one postulate or corollary. The purpose of this section is to review some of these studies. Such studies are subdivided into three categories depending if they involve one, two, or three levels of generality. It will be seen that the Hierarchical model provides the integration of such research.

A. STUDIES ON MOTIVATIONAL DETERMINANTS AND CONSEQUENCES AT ONE LEVEL OF GENERALITY

Some studies have looked at the interplay between social factors, psychological mediators, self-determined motivation, and outcomes in one particu-

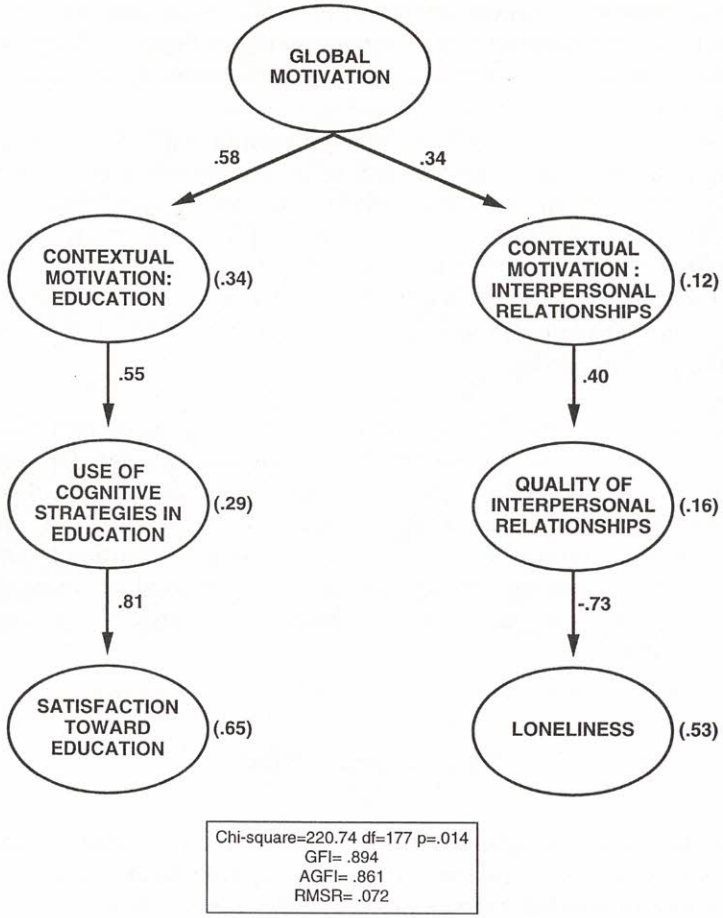

Fig. 7. A confirmatory test (with LISREL) of the specificity hypothesis of motivational consequences at the contextual level. Numbers on the arrows are the fully standardized betas from the LISREL analyses (all values are significant), while those in parentheses reflect the explained variance. Please note that the measurement model is not presented for sake of clarity. GFI: Goodness of Fit Index; AGFI: Adjusted Goodness of Fit Index; RMSR: Root Mean Square Residual. (From Chantal, Guay, & Vallerand, 1996.)

lar context, namely education (e.g., Guay & Vallerand, in press; Losier et al., 1996; Vallerand et al., in press). In a first study, Vallerand et al. (in press) tested such a sequence with respect to an important applied problem, namely dropping out of high school. The researchers proposed that the

social context, and especially the behaviors of teachers, parents, and the school administration toward students, influences the latter's perceptions of competence and autonomy. The less autonomy supportive the social agents' behaviors, the less positive students' perceptions of competence and autonomy. In turn, the less positive these perceptions, the lower students' levels of self-determined school motivation. Finally, low levels of self-determined motivation lead students to develop intentions to drop out of high school that are later implemented, leading to actual drop-out behavior whenever this is possible.

This model was tested with more than 4,000 high school students using a prospective design. In October, students completed the various scales that assessed all aspects of the model. The following year, the researchers contacted the Ministry of Education as well as each of the schools in order to identify students who had dropped out of school. A structural equation modeling analysis was performed on the data using LISREL. The results are presented in Figure 8. As can be seen, the results supported the proposed model with highly adequate fit indices. All proposed structural paths were supported except for the link between autonomy-supportive behavior from the school administration and perceived school competence.

The findings from the Vallerand et al. (in press) study were replicated by Losier and his colleagues (1996) with respect to dropping out of graduate

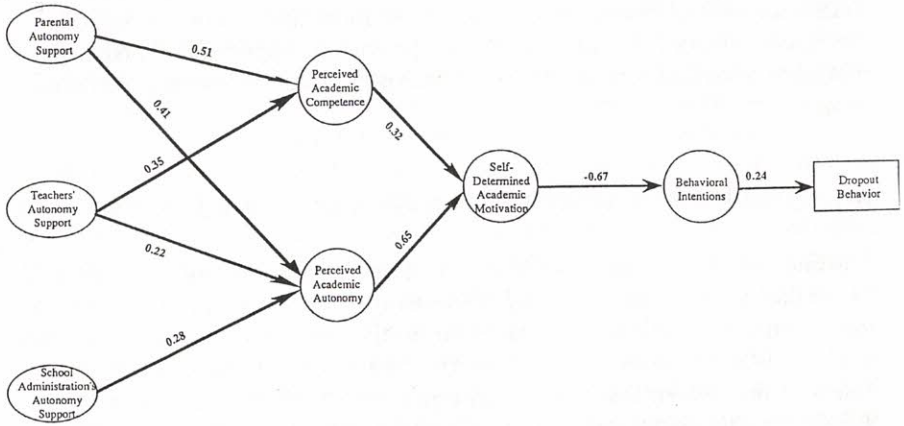

Fig. 8. A confirmatory test of the motivational model of high school dropout. Numbers on the arrows leading to a circle are the fully standardized betas from the LISREL analyses (all values are significant). The measurement model is not presented for sake of brevity and clarity. The fit indices are Goodness of Fit (GFI) = .96; Adjusted Goodness of Fit (AGFI) = .94. (Adapted from Vallerand, Fortier, & Guay, in press.)

school. In addition, Losier et al. showed that not only perceptions of competence and autonomy, but also perceptions of relatedness represent an important psychological mediator of the contextual factors-motivation relationship. Furthermore, Guay and Vallerand (in press) tested the validity of the model developed by Vallerand et al. (in press) with respect to the prediction of final grades in grade 9 and 10 high school students. The results of two studies provided support for the validity of the motivational model in that it was found that social agents' behavior determined students' perceptions of competence and autonomy that in turn influenced students' self-determined motivation. The more self-determined the students' motivation, the higher the grades they obtained, even when grades from the previous year were controlled for (Study 2). Finally, using path analysis, other studies have yielded support for the causal links between social factors, motivation, and consequences in the leisure context with elderly individuals (Losier, Bourque, & Vallerand, 1993), as well as at the situational level in the laboratory with university students (Elliot & Harackiewicz, 1996; Harackiewicz & Elliot, 1996).

The results of the above studies provide additional support for several postulates and corollaries of the Hierarchical model. More specifically, all studies supported Corollary 3.1 with respect to the impact of social factors on motivation. In addition, some studies tested and found support for Corollary 3.2 on the role of perceptions of competence, autonomy, and in the case of the Losier et al. (1996) study, the role of relatedness as a mediating agent between social factors and motivation. In addition, all studies supported Postulate 5 on the role of motivation in producing important consequences. Finally, all studies provided support for Corollary 5.1 that postulates that self-determined forms of motivation lead to positive outcomes.

B. STUDIES INVOLVING TWO LEVELS OF GENERALITY

Some researchers have assessed the combined impact of motivation at the higher level in the hierarchy on motivation at the next lower level (the top-down effect) and social factors on motivation, and how the latter may lead to different consequences. In the first study, Williams et al. (1996) assessed the determinants and consequences of motivation toward losing weight. In this study, these authors had patients complete scales assessing the (global) autonomy orientation (from the GCOS, Deci & Ryan, 1985b) at the beginning of the treatment, as well as contextual perceptions of autonomy support from the medical staff (perceptions of having one's autonomy supported), and contextual motivation toward pursuing one's

treatment. The last two scales were assessed at midpoint in the treatment. Williams et al. also assessed levels of attendance during the 6-month duration of the treatment, as well as final body weight index. The authors conducted a path analyis on the data. The results showed that the more self-determined one's global motivation, and the more one felt that his or her autonomy was supported by the medical staff (a positive contextual factor), the more self-determined the patient's contextual motivation for losing weight. In turn, having a self-determined motivation toward losing weight led patients to attend the sessions that in turn led to significant loss of body weight. As predicted by Corollary 5.2, contextual motivation was a better predictor of attendance than global motivation.

In the second set of studies, Williams and Deci (1996) assessed the processes through which medical students come to internalize psychosocial values and behave in a more humanistic fashion toward patients. Similar to their study with weight-loss patients, Williams and Deci showed that medical students with a global autonomy orientation who interacted with autonomy-supportive instructors (contextual factor), came to display contextual self-determined motivation toward an interviewing course. In turn, self-determined motivation toward the interviewing course predicted the internalization of psychosocial beliefs and a more patient-centered approach during interviewing. These findings were obtained in two studies, including a 2.5-year longitudinal study. Again, in support of Corollary 5.2, contextual motivation proved to be a better predictor of patient-centered behavior than global motivation.

Other studies have focused on the determinants and consequences of situational motivation. Thus, in a recent study in the realm of leisure, Blanchard and Vallerand (1996a, Study 1) found that self-determined motivation toward basketball at the contextual level coupled with positive personal and team performance (two situational factors) jointly led to higher levels of self-determined situational motivation. Situational motivation, in turn, led to higher levels of positive affect and attention. Similar findings were obtained in a study on students' engagement in science activities (Meece, Blumenfeld, & Hoyle, 1988), where it was found that intrinsic motivation toward education at the contextual level led students to develop self-determined motivation at the situational level that in turn created active cognitive engagement in the classroom during science activities.

The studies presented above provide additional evidence for some of the postulates and corollaries of the model. More specifically, all studies showed that motivation at a higher level in the hierarchy does influence motivation at the next lower level in the hierarchy (Corollary 3.3). In addition, several of these studies (Blanchard & Vallerand, 1996a; Williams & Deci, 1996; Williams et al., 1996) showed that social factors at the

appropriate level influence motivation (Corollary 3.1). Finally, all studies revealed that motivation leads to important outcomes (Postulate 5), that the more self-determined the motivation, the more positive the outcomes (Corollary 5.1), and that outcomes at a given level in the hierarchy are produced by motivation at the same level of generality as the consequences (Corollary 5.2; Blanchard, Vallerand, & Provencher, 1996; Meece et al., 1988; Williams & Deci, 1996; Williams et al., 1996). Thus, overall, the above studies provide important additional support for several of the postulates and corollaries of the Hierarchical model.

C. AN OVERALL TEST OF THE HIERARCHICAL MODEL

Studies reviewed in this chapter so far have provided support for specific aspects of the Hierarchical model. However, these studies involved at best two levels of analysis. In that sense, these studies are limited in scope. To the best of our knowledge, no one study in the intrinsic–extrinsic motivation literature has simultaneously dealt with intrinsic–extrinsic motivation at the three levels of generality. Doing so would allow one to test several postulates and corollaries of the model, in large part because the model would then be assessed more completely.

Vallerand and Guay (1996) designed a study to test simultaneously several of the model's postulates and corollaries. It might prove useful at this stage to turn to Table V, which presents the various postulates and corollaries of the Hierarchical model. First, these authors tested Postulate 2 stating that intrinsic and extrinsic motivation and amotivation exist at the three levels of generality (see center of Figure 1). Second, they tested Corollary 3.2 on the causal effects of perceptions of competence, autonomy, and relatedness on motivation at each of the three levels of generality (see the left-hand side of Figure 1). Third, they also tested Corollary 3.3 with respect to the top-down effects of global motivation on the different contextual motivations toward leisure, education, and interpersonal relationships, as well as that of contextual motivation on situational motivation (see center of Figure 1). In addition, the authors tested the specificity hypothesis that only the contextual motivation relevant to the activity being performed would influence situational motivation. Furthermore, Vallerand and Guay tested three aspects of motivational consequences (see the right-hand side of Figure 1). First, cognitive, affective, and behavioral consequences can be distinguished from each other (Postulate 5). Second, the more self-determined the motivation, the more positive the outcome (Corollary 5.1). And finally, consequences at a given level of the hierarchy result from motivation at that same level (Corollary 5.2). Thus, Vallerand and Guay

TABLE V
POSTULATES AND COROLLARIES OF THE HIERARCHICAL MODEL

Postulate 1	A complete analysis of motivation must include intrinsic and extrinsic motivation and amotivation.
Postulate 2	Intrinsic and extrinsic motivation exist at three levels of generality: The global, contextual, and situational levels.
Postulate 3	Motivation is determined by social factors and top-down effects from motivation at the proximal level higher up in the hierarchy.
Corollary 3.1	Motivation can result from social factors that are either global, contextual, or situational depending on the level of generality.
Corollary 3.2	The impact of social factors on motivation is mediated by perceptions of competence, autonomy, and relatedness.
Corollary 3.3	Motivation results from top-down effects from motivation at the proximal level higher up in the hierarchy.
Postulate 4	There is a recursive bottom-up relationship between motivation at a given level and motivation at the next higher level in the hierarchy.
Postulate 5	Motivation leads to important consequences.
Corollary 5.1	Consequences are decreasingly positive from intrinsic motivation to amotivation.
Corollary 5.2	Motivational consequences exist at the three levels of the hierarchy and the degree of generality of the consequences depends on the level of the motivation that has produced them.

tested all postulates and corollaries of the model, except Postulate 1 (on the importance of intrinsic and extrinsic motivation for a complete analysis of motivation), Corollary 3.1 (on the effects of social factors on motivation), and Postulate 4 (on the recursive effects of motivation).

In order to test the various postulates and corollaries of the Hierarchical model mentioned above, Vallerand and Guay (1996) asked slightly more than 1000 college students, who had just been engaged in educational activities in the classroom, to complete various scales. Students thus completed the Situational Motivation Scale (Guay & Vallerand, 1995) toward the educational task they had been engaged in just before the researchers came in the classroom. In addition, students completed scales assessing situational cognitive, affective, and behavioral consequences dealing with concentration and affects experienced during task engagement, and behavioral intentions of future persistence toward that specific academic activity (adapted from Vallerand et al., 1989). Students also completed scales assessing perceptions of competence (adapted from Losier et al., 1993), autonomy (adapted from Blais & Vallerand, 1992), and relatedness (adapted from Richer & Vallerand, in press) at the situational, contextual, and global levels. Finally, students completed motivation scales at the contextual and global levels: the Leisure

Motivation scale (Pelletier et al., in press), the Academic Motivation scale (Vallerand et al., 1989), the Interpersonal Motivation Inventory (Blais et al., 1994), and the Global Motivation Scale (Guay et al., 1996). Structural equation modeling was performed on the data using EQS. In light of the large number of variables and the stress this imposed on the statistical test of the model, the self-determination index was used to integrate the intrinsic and extrinsic motivation, and amotivation subscales at all three levels of generality.

The results of the structural model are presented in Figure 9. As can be seen, results provided support for the Hierarchical model. The results yielded satisfactory fit indices (see the figure caption). Alternative models were also run and found to be less satisfactory than the one proposed by the Hierarchical model. Furthermore, all 22 postulated links were significant, except for the perceived relatedness-motivation in education link. Thus, all basic postulates and corollaries that were tested in this study were substantiated. First, it was possible to distinguish motivation at the global, contextual, and situational levels, thereby providing support of the hierarchical structure of the model (Postulate 2). Second, at each level, perceptions of autonomy, competence, and relatedness were found to predict motivation (Corollary 3.2). There was also support for the fact that perceptions of autonomy, competence, and relatedness for each of the different contexts were found to affect only motivation that was relevant to the appropriate context. There was also support for the top-down hypothesis (Corollary 3.3), where global motivation influenced each of the three contextual motivations. Of interest is that only motivation in education was found to significantly influence situational motivation toward an educational task (as proposed by the specificity hypothesis). Support was also found for the hypothesized consequence aspects of the model. First, it was possible to distinguish the three types of consequences, namely affect, cognition, and behavior, at the situational level (Postulate 5). Second, Corollary 5.1 was supported as situational self-determined motivation was found to positively influence affect, cognition, and behavior. Finally, there was also support for Corollary 5.2, in that only situational motivation was found to affect situational consequences. Neither global nor any of the contextual motivations were found to influence situational consequences.

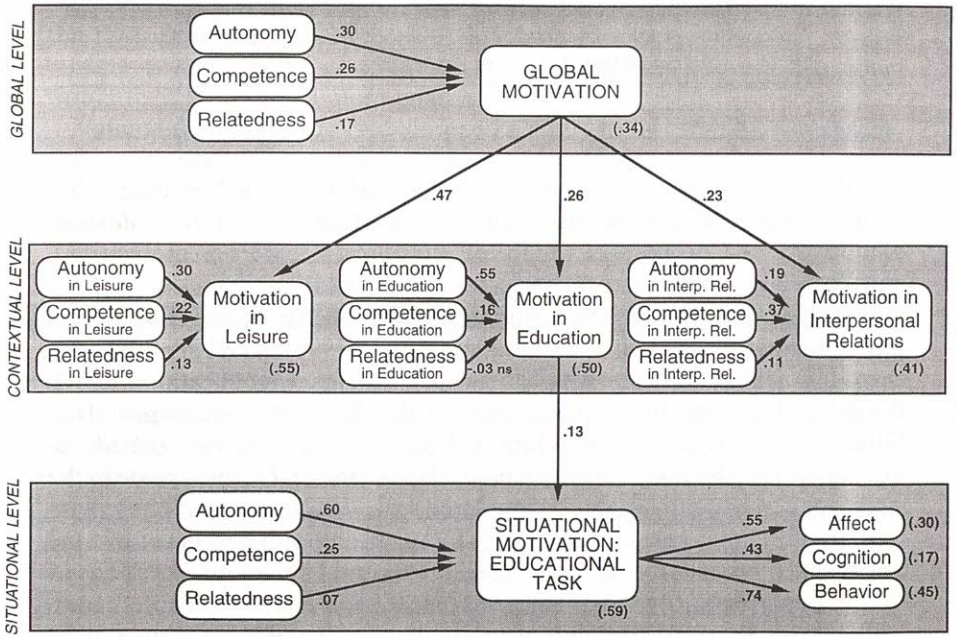

Fig. 9. A confirmatory test (with EQS) of some postulates and corollaries of the Hierarchical model. Numbers on the arrows leading to a circle are the fully standardized betas from the LISREL analyses (all values are significant), while those in parentheses reflect the explained variance. The fit indices are CFI = .87, NNFI = .86. Please note that the measurement model is not presented for sake of clarity. (From Vallerand & Guay, 1996.)

The findings of the Vallerand and Guay study are important for at least two reasons. First, they provide support for all postulates and corollaries of the model, except Postulates 1 and 4 and Corollary 3.1, as indicated earlier. Research reviewed in this chapter had already shown that there is empirical evidence for most if not all postulates and corollaries of the model. However, the main contribution of this study is that support for the various postulates and corollaries was obtained through a simultaneous test of the model. Thus, the Vallerand and Guay study provides crucial support for the overall structure of the Hierarchical model.

The second contribution of this study is that it shows that in spite of the model complexity, research involving several postulates and corollaries of the model can be carried out, because of recent methodological and statistical advances. The present study thus paves the way to future research. For instance, future research could replicate the Vallerand and Guay findings with a nonstudent population. In this respect, different life contexts would need to be integrated in the model in order to capture the most central ones for an older population. At the very least, the school context should be changed for work. By replicating the Vallerand and Guay findings, such a study would provide important support for the external validity of the hierarchical model. In addition, research could deal with the developmental processes involved in the elaboration of the motivational hierarchy. Developmental research (see Harter, 1985) suggests that self-processes tend to develop from the specific to the general. It thus appears plausible that motivational experiences at the situational level are first represented in

different life contexts and later generalized at the global level. This hypothesis needs to be assessed, as it would yield invaluable information on how the Hierarchical motivational structure comes to evolve.

IX. Unresolved Issues

In this section, we deal with unresolved issues with respect to three aspects of the model. A first issue concerns limitations of the research that has been conducted on the model so far. For instance, much of the research on the model has been carried out with the student population with little attention to gender, race, or cultural differences. Although differences may exist as a function of these variables at the mean level, it is expected that the processes proposed by the model should take place for all individuals. Thus, in the Vallerand et al. (in press) study on high school dropout rates, it was found that females reported significantly higher means than males on autonomy support (from teachers and the school administration), perceptions of school competence and autonomy, as well as self-determined motivation. Not surprisingly, they actually dropped out of school significantly less than males. More importantly, when the model depicted in Figure 8 was tested separately for males and females, results supported the invariance of the model across gender. We believe that similar results should be obtained as a function of race and culture. Future research should focus on gender, race, and ethnic differences as they should provide important information about the external validity of the model.[10]

A second limitation of our research is that in several of our studies, motivation was assessed at the end of the experimental or assessment session. For instance, in the Blanchard et al. (1995, Study 1) study, situational motivation was measured immediately after the basketball games. It is possible that assessing motivation at that specific time rather than at some other point in time (e.g., at the beginning or in the middle of the game) may have affected the results of the study. However, two points are in order. First, most studies in the intrinsic–extrinsic motivation literature have used this approach most likely in order to allow situational variables to affect situational motivation. As we have shown, results from the present

[10] It should be noted that this motivational pattern where females display a more self-determined motivational profile than males and consequently derive more positive consequences has been obtained in various life contexts including education (e.g., Vallerand & Bissonnette, 1992; Vallerand et al., 1989, 1993), leisure and sports (e.g., Brière et al., 1995; Pelletier et al., 1995, 1996), and interpersonal relationships (Blais et al., 1994). Future research is needed in order to identify the nature of the psychological processes underlying such gender differences.

studies are directly in line with those of the intrinsic–extrinsic motivation literature. Second, even our own research has shown that assessing situational motivation while participants are still involved in the activity (e.g., Guay & Vallerand, 1995; Vallerand & Guay, 1996) led to findings similar to those of studies where motivation was assessed immediately after engagement in the activity. Thus, we feel that such a particularity of our research should not have unduly affected our findings.

A final limitation of the research reported in this chapter is that much of it was correlational in nature. Thus, a caveat is in order with respect to cause-and-effect relations. Yet, we feel confident in the interpretation of the findings for three reasons. First, several of the correlational studies used structural equation modeling (with LISREL or EQS). Such a statistical technique is highly conservative. That is, one unsupported path in a given model may be sufficient to lead to a poor statistical fit. The fact that very good fits were obtained across the studies reported in this chapter provides important support for the direction of causality that was proposed in the various models. Second, some experimental studies (e.g., Vallerand & Reid, 1984) that also used path analytic techniques led to results parallel to those of correlational studies (e.g., Blanchard & Vallerand, 1996b) (see Figures 2 and 3). Finally, the results of correlational studies reported herein are directly in line with much of the experimental literature on intrinsic/extrinsic motivation. In sum, although future research would do well to study the proposed relations in the Hierarchical model from an experimental perspective, we feel that the direction of causality of the various relations proposed in the model is sound.

The second issue deals with social factors and how they are portrayed in the model. So far in our discussion, we have focused on social factors and their effects on motivation. We have not discussed how some elements of the model (e.g., motivation, consequences, etc.) may also have an impact on social factors. This presentation of social factors may thus be seen as too linear. We would like to underscore, however, that a more dynamic interplay among various elements of the model is also possible. This may take place, for instance, when some elements of the model such as the motivation of a subordinate influence the behavior of a supervisor (a social factor) toward the subordinate. Thus, through their own behavior, individuals may bring upon themselves different social factors that may further influence their motivation and behavior. For instance, through repeated interactions, teachers may observe a child's behavior and develop expectations with respect to this student's motivation. In line with the "self-fulfilling prophecy" (Rosenthal & Jacobson, 1968; Rosenthal & Rubin, 1978) and the "behavioral confirmation" process (Snyder, 1984, 1992), it could be

predicted that such expectations may lead those teachers to behave toward the child so as to confirm their beliefs about the child's motivation.

A recent laboratory study by Pelletier and Vallerand (1996, Study 2) has attempted to show how this "beliefs create reality" sequence operates in a supervisory context. These authors reasoned that to the extent that supervisors perceive subordinates to be intrinsically motivated, they should be more likely to act in an autonomy-supportive way, presumably because they realize that subordinates want to do the task. Thus, there is no need to be controlling toward them. On the other hand, perceiving subordinates as extrinsically motivated (i.e., as externally regulated) should lead supervisors to act in a controlling way in order to ensure that behaviors are emitted as expected. Supervisors may come in with these beliefs in mind and, unknowingly, may adjust their behavior toward the subordinate to suit their beliefs. In so doing, the beliefs that the subordinate's motivation is not intrinsic may turn into reality, thereby killing whatever motivation was there at the beginning.

In their study, Pelletier and Vallerand assigned participants to the role of supervisor or subordinates. In three conditions, supervisors were told that the subordinate was either intrinsically motivated (the intrinsic-motivation beliefs condition), extrinsically motivated through external regulation (the extrinsic-motivation beliefs condition), or were given no information regarding the subordinate. Then, the subordinate attempted to complete various figures on the SOMA puzzle under the guidance of the supervisor for a period of 20 min. The interaction was recorded through a hidden tape recorder. Following task completion, the supervisor was taken to another room to complete a questionnaire dealing with his perceptions of his own behavior and the motivation of the subordinate. During this time, the free-choice behavior of the subordinate was observed for 6 min. Finally, the subordinate also completed a questionnaire assessing perceptions of the supervisor and self-perceptions of motivation. Two results of interest were obtained. First, subordinates perceived the supervisor as being more autonomy supportive and less controlling in the intrinsic-motivation beliefs condition than in the extrinsic-motivation belief condition. These perceptions were also corroborated by blind judges who listened to the tapes, as well as by the supervisors themselves! Second, subordinates who were believed to be intrinsically motivated reported significantly more intrinsic interest, spent more time on the task during the free-choice period, and were also perceived by their supervisor to be more intrinscally motivated than subordinates whose supervisors believed them to be extrinsically motivated.

In sum, the supervisors' beliefs about the student's motivation led them to behave so as to confirm their beliefs. In the words of Snyder (1984), beliefs had turned into reality. More important, for the purpose of our

present discussion, these findings underscore the fact that elements of the model (i.e., motivation) may influence the impact of social factors on motivation. Thus, the road leading to the influence of social factors on motivation may be less straightforward and more complex and dynamic in nature than actually posited by the model. Future research is needed to uncover the underpinnings of the various sources of impact on social factors and the processes through which they operate. Such research may reveal that other elements of the Hierarchical model in addition to motivation (e.g., consequences) may also serve to trigger the "Social factors → Motivation → Consequences" causal sequence. Such recursive links should then be formally integrated into the model.

The third and final issue that needs to be addressed with respect to the model deals with the dynamic interplay between processes occuring in different life contexts. Of interest is how motivation toward different life contexts may be integrated in producing consequences in one specific context. Research reported herein (e.g., Chantal et al., 1996) provides support for the specificity hypothesis, where motivation toward a specific life context has the most important impact on consequences in that specific context. However, it nevertheless remains that motivation in other contexts can also have some impact. For instance, research by Senécal and Vallerand (1996) assessed the relative impact of contextual motivations toward family activities and toward work on involvement in family life activities. Results revealed that although motivation toward family had by far the most important impact on involvement in family activities, motivation toward work also had some impact. Involvement in family activities was greater when both motivations toward family activity and toward work were self-determined. It thus appears that consequences at the contextual level may be enhanced when motivation toward different life contexts are harmoniously integrated because of their self-determined nature (see Sheldon & Kasser, 1995). This hypothesis remains to be further explored with respect to the model's structure.

Sometimes the dynamic interplay between two contextual motivations is not so harmonious. In fact, it is possible that the motivations toward two life contexts clash in influencing situational motivation. For instance, if motivation toward a second context is primed while the individual is doing an activity related to a first life context, situational motivation may be influenced by both contextual motivations. Which contextual motivation will have the most prevalent effects on situational motivation should depend on the relative strength of each contextual motivation and the current situation. Motivational conflict then arises. Without considering all conflict possibilities, let us focus on two that result from an approach–avoidance conflict (e.g., Lewin, 1951) in pressured and nonpressured situations. An

approach–avoidance conflict is one where an individual has motivations to both approach and to avoid the task. Most research that has focused on this phenomenon (e.g., Lewin, 1951; Miller, 1944) has shown that the relative strength of the competing motivations will determine the resultant behavior. However, the current situation may interact with the contextual motivation in determining the resulting situational motivation. One key situational element to be considered is whether the situation is pressuring behavior in one direction or is rather pressure-free. In line with classic research on conflict, we would predict that in pressure-free situations, the relative strength of the competing motivations will determine situational motivation and ensuing consequences.

Let's take an example. A high school student is studying for next week's exam at home. Her contextual motivation toward education is generally not self-determined (mostly externally regulated). The situation is relatively pressure-free because the exam is not for another week. This situation, coupled with her motivation in education, should lead the student to display an externally regulated situational motivation. While she is studying, her brother mentions the word "game." This immediately primes her high contextual intrinsic motivation level toward her own leisure activities, the most important one being the Nintendo® games. The leisure and education contextual motivations clash and the student's situational motivation is then even further diminished. She starts immediately to feel the conflict between studying for her exam and playing Nintendo. She has a tough time concentrating, can't recall what she has just read. She feels anxious. Eventually, she puts her books away and goes to play Nintendo.

It is likely that in relatively free and unpressured conflict situations, the life context where intrinsic motivation (or self-determined motivation) is highest will influence situational motivation the most, and lead to expected consequences. Thus, the person would turn toward (or continue engagement in) the activity associated with the life context where motivation is the most self-determined. However, when there is pressure to engage in a specific activity, then the person may still perform the behavior even though motivation may be more self-determined in another life context. Thus, if the student's exam would have been tomorrow morning, chances are that she would not have played Nintendo even though her motivation is more self-determined in this life context than in education. However, the student's situational motivation toward studying would have been low (i.e., highly externally regulated), and although she would have performed the behavior (i.e., studying), she would still have experienced several negative consequences (e.g., lack of concentration, anxiety, guilt, poor recall, etc.). In other words, priming one's intrinsic motivation for another context should increase extrinsic motivation (i.e., external regulation) toward the activity

to be performed in a pressured situation, leading to some negative consequences.

As can be seen from the above example, a complete understanding and prediction of situational motivation and ensuing consequences may require knowledge of the motivational strength in more than one life context. Future research will tell if and how such a perspective on motivational conflict should be integrated in the Hierarchical model.

Finally, the dynamic interplay between motivational processes in different life contexts may also lead to what may be called the compensation effect. The structure of the model, especially at the contextual level, permits the possibility that losses of self-determined motivation in one life context may be compensated by motivational gains in a second life context. There is some indirect support for this hypothesis. For instance, the work of Taylor (see Taylor, 1991; Taylor, Kemeny, Reed, & Aspinwall, 1991) has consistently shown that most victims of various misfortunes that attack the self seem to react with renewed interest and meaning in life. There does seem to exist a homeostasis mechanism within the self that attempts to regulate and protect it (O'Connor & Rosenblood, 1996). Losses in one life context are countered by gains in other life contexts, presumably in order to restore a general equilibrium in the self. Perceptions of competence, autonomy, and relatedness may represent the psychological mechanism responsible for such an effect. Because needs of competence, autonomy, and relatedness are fundamental needs that human organisms seek to fulfill (Deci & Ryan, 1985a), it could be postulated that there is a compensation mechanism in the self that may serve to regulate losses in either of these perceptions. Furthermore, because changes in one's perceptions of competence, autonomy, and relatedness translate into motivational changes (e.g., Blanchard & Vallerand, 1996; Reeve & Deci, 1996; Vallerand & Reid, 1984, 1988), it can be predicted that a loss of perceived competence, autonomy, or relatedness and the consequential motivational loss in one life context, should trigger a compensation effect that should lead to the enhancement of perceptions of competence, autonomy, or relatedness, and therefore increased self-determined motivation in a second life context.

Some evidence exists on the compensation effect with respect to perceived competence and social behavior. In one study (Brown & Smart, 1991, Study 1), college students were randomly assigned to conditions of success or failure on an important achievement task. Then participants assessed themselves on dimensions pertaining to achievement and interpersonal relationships. As expected by the compensation effect, it was found that participants who experienced failure on the achievement task perceived themselves as less competent on the achievement task, but as more competent on the interpersonal context than participants who experienced success

on the achievement task. This was especially true for individuals who perceived themselves as competent in the social (interpersonal) context. Furthermore, in a follow-up study (Brown & Smart, 1991, Study 2), it was found that this compensation effect in the interpersonal sphere translated into helping behavior toward another person. This last finding supports the fact that interpersonal motivation was activated through the compensation effect.

In a recent study, Blanchard, Vallerand, and Provencher (1996) tested the compensation effect with respect to contextual, motivation toward basketball. Basketball players (who were also college students) completed two series of questionnaires; one near the end of the fall term and the second at the beginning of the winter term. Questionnaires assessed participants' contextual motivation and perceptions of competence toward education and basketball at both points in time. In addition, participants were asked in January to evaluate their school performance for the previous term. Blanchard et al. were interested to see if individuals who perceived their school performance as a failure would experience a loss in contextual perceptions of competence and self-determined motivation toward school, and whether such a motivational loss would translate into motivational gains toward the basketball context. However, in line with Brown and Smart (1991), such a compensation effect was expected to take place only for participants who perceived themselves as competent toward basketball (as assessed during the fall term).

Two results of interest were observed. First, as expected, individuals who perceived their school performance as negative during the first term perceived themselves as less competent and their motivation as less self-determined toward school at the beginning of the second term than those who did well at school. In order to test for the compensation effect, participants were divided into four groups, depending on whether they perceived their school performance as positive or negative, and if they perceived themselves as competent or not at basketball during the fall term. The second result of interest is that most participants experienced a drop of self-determined motivation toward basketball from the first to the second term. The sharpest decrease in motivation took place for individuals who had experienced a school failure and who perceived themselves as incompetent in basketball. Only one group experienced a small (but non significant) increase in self-determined motivation. In line with the compensation hypothesis, these participants were those who experienced a negative school performance, but who perceived themselves as competent at basketball. In fact, their motivation was higher (but nonsignificantly so) than that of participants who had perceived their school performance as positive and who also perceived themselves as competent at basketball. This makes

sense, because only participants who had undergone a loss of competence and motivation in education should have been motivated to restore their sense of self and consequently to experience an increase in motivation toward a second life context, in this case basketball.

We believe that the compensation effect is not only an interesting phenomenon, but also an important one. Indeed, the compensation effect may serve to maintain equilibrium in positive perceptions of the self (see Brown, 1991). Linville (1987) found that individuals who have higher levels of self-complexity, that is individuals who are able to compartmentalize their self-structures, display higher levels of mental health. However, she did not indicate the nature of the psychological processes responsible for this enhanced effect on mental health. Perhaps compartmentalization occurs because it renders the compensation effect more readily accessible. It might be that without such compartmentalization of self-structures, the compensation effect could not be operationalized and mental health could not be maintained.

Although the results from the Blanchard et al. (1996) study are preliminary, they nevertheless reveal that future research on this issue may prove worthwhile. Such research could reveal the actual psychological processes underlying the compensation effect and show how it may be best integrated into the hierarchical model.

X. Summary and Conclusions

The purpose of this chapter was to outline a general model of intrinsic and extrinsic motivation, the Hierarchical model. This model serves two objectives. First, the model provides a framework to organize the literature on intrinsic and extrinsic motivation, as well as to identify the psychological mechanisms underlying motivational changes. This was made especially evident through the presentation of Postulates 1, 2, 3, and 5 and related corollaries. Postulate 1 and associated research make clear that intrinsic and extrinsic motivation and amotivation are important concepts to be considered in order to better understand human behavior. Intrinsic and extrinsic motivation represents a substantial portion of people's experiences when involved in activities. Furthermore, conceptual and methodological advances were presented supporting a multidimensional approach to the study of motivational phenomena. Such an approach was found useful, for instance, for distinguishing nonintrinsic but internalized motivational forces (i.e., integrated and identified regulation) that promote adaptive conse-

quences such as persisting at difficult tasks from other internalized forces (i.e., introjected regulation) that compromize adaptive adjustment.

Postulate 2 focuses on the representations of motivation at different levels of generality within the individual. Although the personality and social psychological perspectives have traditionally focused on the global and situational levels, respectively, the Hierarchical model proposes that a third, intermediary, level (the contextual level) represents an important addition that increases our understanding of intrinsic and extrinsic motivational phenomena. Research reviewed in this chapter provides support for this hierarchical structure.

Postulate 3 integrates the literature on motivational determinants. In line with this literature, Corollary 3.1 posits that social factors can influence intrinsic and extrinsic motivation, and amotivation. Building upon Postulate 2, this corollary also adds that such effects can take place at the three levels of the hierarchy. Corollary 3.2 goes further and proposes the nature of the psychological processes responsible for the effects of these social factors on motivation. Specifically, in line with cognitive evaluation theory (Deci & Ryan, 1985a), Corollary 3.2 posits that the effects of social factors on motivation are mediated by perceptions of competence, autonomy, and relatedness. These two corollaries serve to explain much of the social psychological research on the effects of various social factors on intrinsic and extrinsic motivation. On the other hand, Corollary 3.3 deals with intrapersonal influences on motivation that have been studied for the personality tradition. This corollary proposes that there is a top-down effect from motivation at a higher level upon motivation at the next level down in the hierarchy. Research reviewed in this chapter yielded overwhelming support for Postulate 3 and its corollaries, thereby providing coherence and structure for the determinants of intrinsic and extrinsic motivation postulated in the literature.

Postulate 5 serves to integrate the literature on motivational consequences. Research was reviewed that showed that intrinsic and extrinsic motivation do cause outcomes. In addition, it appears heuristic to subdivide these outcomes into cognitive, affective, and behavioral categories. In line with self-determination theory (Deci & Ryan, 1985a, 1991; Ryan, 1995), Corollary 5.1 posits that the impact of motivation on consequences varies as a function of the level of self-determination inherent in each type of motivation. This typically means that consequences are decreasingly positive from intrinsic motivation to amotivation. Much research was reviewed supporting this corollary, especially at the contextual level. Corollary 5.2 also specifies that these outcomes are hypothesized to be at the same level of generality as the level of the motivation that engendered them. Thus, situational, contextual, and global motivations are hypothesized to lead to

situational, contextual, and global consequences, respectively. Here again, support was obtained for this corollary. Overall, Postulate 5 and its two corollaries integrate the motivation literature on consequences.

The model was also useful in integrating studies that have departed from past research in two ways. A first set of studies included motivational determinants at two levels of generality. For instance, some of these studies included both intrapersonal (e.g., global motivation) and contextual factors (e.g., general behavior from people in position of influence) on contextual motivation (e.g., Williams et al., 1996). The second set of studies of interest has concentrated on a "Social Factors → Motivation → Consequences" causal sequence at one level of generality. For instance, research has demonstrated that behaviors from parents, teachers, and the school direction influence students' self-determined motivation that in turn determines their persistence toward school (Vallerand et al., in press). Such research has the potential for providing a solid base from which adaptation-promoting interventions may be designed. More specifically, by intervening on specific social factors, one can nurture (or reestablish) self-determined forms of motivation that will then lead to positive outcomes. This causal sequence captured by the model merits attention as a catalyst to both applied research and useful interventions.

A second objective of the hierarchical model was to lead to novel and testable hypotheses. This was made especially evident with Postulate 4. This postulate posits that motivation can have recursive effects from motivation at a lower level in the hierarchy to the next higher level in the hierarchy. We have seen that this postulate is particularly useful in explaining motivational changes toward broad spheres of activities (i.e., contexts) where the impetus for change may originate at the situational level. Thus, repeatedly experiencing high levels of situational amotivation in educational activities may lead students to develop an amotivational contextual motivation toward education. Research presented in this chapter has not only supported Postulate 4, but it has also shown that it represents a fruitful base for future research.

Other aspects of the model also appear as prime candidates for future research. For instance, considering motivation from a multidimensional fashion has challenged us to be more specific in our predictions. Thus, it is now clear that it is insufficient to describe an individual as being extrinsically motivated because different types of extrinsic motivation exist, some of which lead to negative consequences and others to positive outcomes. In the same vein, it is now evident that we should not pit intrinsic against extrinsic motivation because both motivations are present within the individual to different degrees. What may be more useful is to uncover which configurations involving the different types of motivation lead to the most

desirable outcomes. We have already shown that a self-determined motivational profile, where intrinsic motivation and identified regulation are high, but amotivation and external regulation are low, leads to positive outcomes. Future research is needed in order to determine if other types of profiles (e.g., high intrinsic motivation and high external regulation) may also lead to positive adjustment, and if so for whom and under what types of circumstances (see Amabile, 1993, on this issue).

Considering motivation at the contextual level within the confines of the Hierarchical model has also forced us to consider individuals as complex entities. Thus, it is inappropriate to describe individuals as being intrinsically or extrinsically motivated. Instead, we must specify what sort of motivation characterizes their involvement toward education, interpersonal relationships, leisure or other broad spheres of activities. Research on this specificity hypothesis has shown that it has merits because, among other things, it leads to a better prediction of both determinants and consequences of motivation. The present structure at the contextual level also leads to new possibilities, such as the study of compensation and conflict effects from the intrinsic–extrinsic motivation perspective. It is believed that these two topics could lead to not only fruitful but also to ecologically valid future research. Indeed, the conflict and compensation effects should only be operational if the activities considered are personally meaningful.

In sum, the Hierarchical Model of Intrinsic and Extrinsic Motivation has been proposed. Such a model serves to integrate the literature and to point toward new research. Foremost, it seeks to better understand the motivation of individuals within their social niche by focusing on the very social contexts and activities that are important to them. It is within such a contextually situated perspective that the model shows its greatest promise of usefulness.

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