

Academic Achievement and Future Time Perspective as a Cognitive-Motivational Concept

M. L. De Volder
Limburg State University
Maastricht, The Netherlands

W. Lens
University of Louvain
Leuven, Belgium

A new approach to future time perspective (FTP) was taken by integrating FTP into cognitive theories of motivation. Valence and instrumentality measurements of 23 general motivational goals were made in a group of 251 high-school boys. Goals were classified in three time zones: near future, distant future, and open present. Results showed that students with high grade point averages (GPA) and high study persistence attached significantly higher valence to goals in the distant future and perceived studying hard as more instrumental for reaching goals in the distant future and open present, than students with low GPA and low study persistence.

Research on future time perspective (FTP) and academic achievement relied heavily on Wallace's (1956) definition of extension of FTP as "the length of the future time span which is conceptualized" (p. 240). This definition was operationalized in a wide variety of techniques. Teahan (1958) analyzed an individual's Thematic Apperception Test (TAT) story with respect to the future time span covered in that story and interpreted this measure as indicative of the extension of the individual's FTP. Several studies reported that students with high grade point averages (GPA) were characterized by a long FTP (Davids & Sidman, 1962; Epley & Ricks, 1963; Goldrich, 1967; Klineberg, 1967; Lessing, 1968; Teahan, 1958; Vincent & Tyler, 1965). However, these results, and particularly the definition of FTP from which they ensued, came under heavy cross-fire from both theoretical and empirical sides. Klineberg (1967) and Lessing (1972) found that a more extended FTP could rep-

resent mere wish-fulfilling fantasy. Dickstein (1969) found a negative relationship between GPA and prospective span of FTP measured from TAT stories in one of several studies that stimulated reexamination of definitions of FTP involving only the capacity to visualize or conceive of future events. Wohlford and Herrera (1970) proposed that Epley and Ricks' (1963) protension measure of FTP from the TAT needed to be differentiated into a cognitive protension measure "that is purely imaginal" and an empirical protension measure that involves "step-by-step strategy to attain a goal" (p. 31). Nuttin (1964) took a totally different approach to the study of FTP. He suggested the following definition:

The psychological future is essentially related to motivation. On the behavioral level the object needed is something to come, to reach, or to achieve, and this constitutes the behavioral future. Thus, the future is the time quality of the goal object; the future is our primary motivational space. (p. 63).

This article is an excerpt from a doctoral dissertation by M. L. De Volder under the direction of J. R. Nuttin and W. Lens at the University of Louvain (Leuven, Belgium) with a grant from the Fonds voor Collectief Fundamenteel Onderzoek.

Requests for reprints should be sent to M. L. De Volder, Center for Educational Research and Development, Limburg State University, Tongersestraat 53, 6200 MD Maastricht, The Netherlands.

We intended to build upon Nuttin's motivational approach to FTP by integrating FTP into cognitive theories of human motivation (Atkinson & Raynor, 1978; Heckhausen, 1977; Vroom, 1964). At the origin of this endeavor was Raynor's (1970) cognitive elaboration of Atkinson's (1957) risk-taking model. Raynor found that in groups

of students with high need for achievement and low test anxiety (highly achievement-oriented subjects) those who perceived good grades in an introductory psychology course as highly instrumental for working out their future career plans obtained significantly higher grades in that course than students for whom good grades had low instrumental value. The main difference between our approach and Raynor's lies in the fact that we also include goals that are not achievement-related. Based on Vroom's (1964) work motivation theory, we assume the strength of motivation instigating and sustaining a certain instrumental act (such as studying) to be a function of the valences of the goals toward which the act is related (or even aimed sometimes) and of the instrumental values of the act for reaching these goals.

The instrumental value of an act is defined (De Volder, 1980) as the difference between the subjective probability of reaching the goal when performing that act, and the subjective probability of reaching the goal when *not* performing that act. The latter notion stems from Irwin (1971) who speaks of an act of abstention, and is also related to Heckhausen's (1977) situation-outcome expectancy and Seligman's (1975) concept of probability of reaching an outcome when not reacting. Behavior that has instrumental value for reaching a certain anticipated goal may at the same time have negative instrumental value for reaching other goals. By engaging in a certain activity (e.g., studying for long periods of time), the realization of other goals, such as high achievement in sports, may become more difficult than when not doing so. Study behavior is said to have negative instrumental value for those latter goals. In general, when the probability of reaching a goal is higher when a certain act is not performed than when it is performed, that act has negative instrumental value for that goal. Motivational goals can be characterized in terms of their temporal distance. Everything else being constant, the valence (anticipated subjective value) of a goal decreases with increasing temporal distance to that goal (Mischel, 1981). The lower the valence of a goal, the lower the strength of motivation for that goal.

We hypothesize that one of the reasons

why some students get higher grades than others can be found in the fact that they are more highly motivated. Furthermore, we assume that they are more motivated because they possess a longer FTP. FTP is, however, not operationalized as the capacity to fantasize about future events. We conceptualize of FTP as consisting of two aspects. The dynamic aspect of FTP is formed by the disposition to ascribe high valence to goals in the distant future. The cognitive aspect of FTP is formed by the disposition to grasp the long-term consequences of actual behavior, as reflected in the concept of instrumental value of a behavioral act. This means that each category of behavior (studying, social contacts, and so on) has its own FTP, at least the cognitive aspect of it. Thus, when study behavior is involved, we could speak of an academic achievement-related FTP. In our view, this conceptualization of FTP as not so much a general disposition but more as several specific dispositions related to a number of broad categories of human behavior, is not entirely new. For instance, Lamm, Schmidt, and Tromsdorff (1976) made a distinction between six domains of FTP: family, personal development, occupation, economics, environment, and politics.

With this definition of FTP, the following research hypotheses were made: (a) Students with high GPA and high study persistence should attach more valence to goals in the distant future and more instrumental value to studying hard for reaching goals in the distant future than students with low GPA and low study persistence and (b) students with high GPA and high study persistence should not differ from students with low GPA and low study persistence with respect to the valence of goals in the near future and the instrumental value of studying hard for reaching goals in the near future. In the procedure we will introduce a third time-zone; no hypotheses were stated with respect to that time zone.

In short, our study is aimed at testing our hypothetical explanation (in motivational terms) of the relationship between FTP and academic achievement. Because this relationship could be obscured by the fact that academic achievement is also highly influ-

enced by other variables such as aptitude and situational factors, we used not only GPA as a criterion variable, but also a more direct measure of study behavior, namely study persistence (time and energy spent on study activities).

Method

Subjects

The subjects were 251 Dutch-speaking Belgian 17-18-year-old boys from two different high schools (212 were 11th graders and 39 were 12th graders). All subjects answered questionnaires anonymously during a regular 1-hour class in the first term of the academic year. No teachers were present. By means of a code number each subject's academic grade at the end of the term could be identified.

Procedure

Following a suggestion by Feather (1975, p. 305) we looked for rather general motivational goals. We therefore selected a representative sample of 23 goals from Nuttin's (1980) Inventory of Motivational Goals, which in total contains 150 positive and 50 negative motivational goals. Nuttin's list of goals is based on extensive empirical research carried out with the motivational induction method (Nuttin, 1980). The valence of each of the 23 goals was measured on a 4-point scale. For the 19 positive goals (numbers 1-19 in Table 1), the response alternatives were: not important at all (score 5), of little importance (score 6), rather important (score 7), and very important (score 8). For the 4 negative goals (numbers 20-23 in Table 1), the response alternatives were: not bad at all (score 5), a bit bad (score 6), rather bad (score 7), and very bad (score 8).

For each goal, subjects rated on a 4-point scale the subjective probability of reaching that goal if they would study hard (e.g., "If I study hard, I will get good grades") and if they would not study hard (e.g., "If I do not study hard, I will get good grades"). The four response alternatives were: not true at all (score 5), maybe true (score 6), probably true (score 7), and certainly true (score 8). For each goal¹, the difference between these two subjective probabilities defines the instrumental value of studying hard for that goal. Corresponding subjective probabilities (which were subtracted from each other) did not correlate significantly. Therefore, the use of the difference score is justified. Finally, 10 items selected from a study behavior questionnaire (Van Calster & De Volder, 1978) were presented to students. These items (e.g., "I study a lot: true-false") were found to be reliable and valid measures of persistence of study behavior (time and effort spent on study activities).

Subjects' academic results (GPA) in the first term, which starts in early September and ends at Christmas, were dichotomized into a high- and low-achievement group using the median GPA in each class as the cutting point. Study persistence scores were also dichotomized into a high- and a low-persistence group with the median persistence score of the whole sample as the cutting point.

Table 1
Twenty-Three Goals Selected From the Inventory of Motivational Objects

Goals
1. An interesting career (DF)
2. Making a lot of money (DF)
3. High social status (DF)
4. A lot of possessions (DF)
5. Living an altruistic life (OP)
6. Helping other people (OP)
7. Social equality (OP)
8. Being my own boss (OP)
9. Leading my own life (OP)
10. Going out (NF)
11. Going on holidays (NF)
12. Relax (NF)
13. Getting good grades (NF)
14. Getting my diploma (NF)
15. Being with the ones I love (NF)
16. A happy family life (DF)
17. Having a loving partner (OP)
18. Being intelligent (OP)
19. Acquiring knowledge (OP)
20. Staying ignorant on many subjects (OP)
21. Failing my exams (NF)
22. Being dependent on others (OP)
23. Living without material comfort (DF)

Note. Goals 1-19 are goals with generally positive valence; Goals 20-23 have generally negative valence. Temporal location of goals is indicated by near future (NF), distant future (DF), or open present (OP).

The two authors and two other raters² trained in Nuttin's technique for coding the FTP involved in motivational goals (Nuttin & Lens, 1980) classified the 23

¹ Subjective probability of reaching a goal when not studying hard (SP_{ns}) is subtracted from the subjective probability of reaching that goal when studying hard (SP_s): $SP_s - SP_{ns}$. For *negative* goals, however, a positive instrumental value score indicates that studying hard is positively instrumental for reaching a negative goal, and this is negatively motivating for studying hard. For our purpose, positive instrumental value scores should always indicate positive motivation. Therefore, we changed the signs of instrumental value scores when *negative* goals were involved. (For a similar reason, valence of negative goals was coded as described in the procedure: high valence should always indicate high motivation.) For example, when not studying hard very probably leads to failure ($SP_{ns} = .90$) and studying hard very improbably leads to failure ($SP_s = .20$) this indicates that studying hard has negative instrumental value for reaching failure ($SP_s - SP_{ns} = -.70$). In other words, by studying hard one avoids failure, which is positively motivating. To express this positive motivational effect, the sign of the instrumental value score is changed.

² With thanks to K. Van Calster and A. Gailly, members of the Research Center for Motivation and Time Perspective, University of Louvain.

Table 2
Mean Valences of Motivational Goals in the Near Future (NF), Distant Future (DF), and Open Present (OP), and Mean Instrumental Values of Studying Hard for Reaching Goals in These Three Time-Zones, as a Function of High Versus Low Grade Point Average

Grade point average	Valence			Instrumental value		
	NF	DF	OP	NF	DF	OP
High	7.24	6.77	7.32	.22	.57	.57
Low	7.22	6.54	7.29	.19	.34	.38
High - Low	.02	.23**	.03	.03	.23**	.19**

* $p < .05$. ** $p < .01$.

motivational goals into three categories as to their localization in the *near future* (within 2 years), the *distant future* (more than 2 years from now), or in an *open present*. This last category groups goals that apply as well to the present as to the future (e.g., "to help other people"). Table 1 shows which goals were classified in the near future, the distant future, and an open present. Seven goals were situated in the near future, 6 in the distant future, and 10 in an open present.³

Results

For each subject, three valence-scores were obtained by calculating the mean valence of goals in each of three time-zones. These mean valence scores were treated as three repeated measures of the dependent variable carried out on the same subjects with time zone as the independent variable within subjects. Academic result (high vs. low GPA) was used as independent variable between subjects. A 2×3 analysis of variance (ANOVA) with repeated measures on one factor was performed (Dixon, 1975). For each subject, three instrumental-value scores are obtained by calculating the mean instrumental value for goals in each of the three time-zones. The same 2×3 design was used to analyze these mean instrumental value scores, which also were treated as three repeated measures of the dependent variable with time zone as the independent variable within subjects. Finally, these two analyses were repeated with study persistence (high vs. low) as the independent variable between subjects.

Table 2 gives mean valence scores of motivational goals in three time-zones for high and low achieving students. The ANOVA resulted in significant main effects of GPA, $F(1, 246) = 6.81, p < .01$, and of time zone, $F(2, 492) = 266.39, p < .001$, and in a significant effect of interaction between GPA

and time zone $F(2, 492) = 6.82, p < .001$. A posteriori tests (Tukey's Honestly Significant Difference; Kirk, 1968) of cell means corresponding to the significant interaction effect showed that high achieving students attach significantly ($p < .01$) higher valence to goals in the distant future than low achieving students. For goals in the near future and open present, differences are in the same direction but not statistically significant.

Table 2 also gives the mean instrumental value attached by high and low achieving students to studying hard as a means of reaching motivational goals in the near future, distant future, and open present. The ANOVA shows significant main effects of academic result, $F(1, 246) = 5.59, p < .02$, and of time zone, $F(2, 492) = 23.37, p < .001$, and also a significant effect of interaction between time zone and GPA, $F(2, 492) = 3.13, p < .05$. A posteriori Tukey tests of cell means corresponding to the significant interaction effect showed that high achieving students perceived studying hard as more instrumental for achieving goals in the distant future ($p < .01$) and the open present ($p < .05$) than low achieving students. For goals in the near future, the difference between the two groups was in the same direction but not statistically significant.

For students with high versus low study persistence, mean valence scores of motiva-

³ The problem of the variability found in ratings of goals with regard to their temporal location was largely avoided by using only three broad temporal locations as units of measurement instead of years (Lessing, 1968). Ratings were made independently by four highly trained raters. They showed perfect agreement except for Goals 15 and 16 when one of the raters chose the open present but was outvoted by the other three (see Table 1).

Table 3

Mean Valences of Motivational Goals in the Near Future (NF), Distant Future (DF), and Open Present (OP), and Mean Instrumental Values of Studying Hard for Reaching Goals in These Three Time-Zones, as a Function of High Versus Low Study Persistence

Study persistence	Valence			Instrumental value		
	NF	DF	OP	NF	DF	OP
High	7.24	6.74	7.31	.31	.61	.68
Low	7.22	6.54	7.29	.11	.29	.25
High - Low	.02	.20**	.02	.20*	.32**	.43**

* $p < .05$. ** $p < .01$.

tional goals in three time-zones and the mean instrumental value scores of studying hard for reaching goals in three time-zones are given in Table 3. The two ANOVAS with study persistence as the independent variable between subjects lead to results very similar to those obtained with GPA as the independent variable. Valence scores of goals were significantly affected by persistence $F(1, 213) = 3.85, p < .05$, time zone, $F(2, 426) = 232.23, p < .001$, and their interaction, $F(2, 426) = 5.34, p < .01$. High-persistent students attach significantly ($p < .01$) higher valence to goals in the distant future than low-persistent students. For goals in the near future and open present, differences were in the same direction but statistically not significant. The instrumental value scores of studying hard for reaching goals were significantly affected by persistence, $F(1, 213) = 21.51, p < .001$, time zone, $F(2, 426) = 19.42, p < .001$, and their interaction, $F(2, 426) = 3.15, p < .04$. High-persistent students perceive studying hard as more instrumental for reaching goals in the distant future ($p < .01$), open present ($p < .01$) and near future ($p < .05$) than low-persistent students. The difference is strongest for goals in the open present and weakest for goals in the near future.

Discussion

Since the results confirmed our hypotheses, it is shown that an approach to FTP in the framework of cognitive theories of motivation is fruitful. When students ascribe higher valence to goals in the distant future and higher instrumental value to studying hard for reaching goals in the dis-

tant future, they will be more persistent in their daily study and obtain better academic results. The causality of these relationships is not derived from the design, which is correlational, but from the cognitive theories of motivation in which the variables are embedded. We identify the motivational effects of a long FTP with ascribing high valence to goals in the distant future (dynamic aspect of FTP) and with ascribing high instrumental value to present (study) behavior for reaching goals in the distant future (cognitive aspect of FTP). No hypotheses were stated regarding the open present. Results were ambiguous and difficult to interpret. With respect to the analysis of instrumental value, results for the open present resemble those for the distant future. With respect to the analysis of valence, results for the open present resemble those for the near future. It is clear that the open present does not fit in a simple manner into a conceptualization of the motivational effects of FTP. Whether the open present should be dropped from the framework of FTP or whether more complex theorizing should be developed to take into account the ambiguous findings with respect to the open present is a problem that is left to deal with in (near or distant) future research.

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Received February 16, 1981 ■