

Research on the students' motivation in physical education

Marc CLOES

University of Liège (Belgium)

Motivation has become an increasing concern in daily life, particularly for those who are involved in the mobilisation of others to act. Such concern derives from the consequences attributed to motivation or lack of motivation as perceived by individuals. People are not characterized by persistent, proactive and positive behaviours and thinking (Ryan & Deci, 2000), hence professionals like educators, managers or health care providers seek help from research to get valuable information designed to solve their clients' motivation problems.

Motivation becomes the centre of discussion whenever it seems to be lacking. Such conditions may become problematic for practitioners. In physical education, for example, lack of motivation was identified as a factor explaining 12.8% of the variance in the anxiety of beginning, inexperienced teachers (Capel, 1983). In a French journal dedicated to physical education teachers, 14% of the papers reviewed by Bertone and Méard (1999) focused on the pupils' motivation, underlining its part among the PE teachers' concerns.

In the teaching situation, developing pupils' motivation is now usually integrated into the general objectives of the school, as showed by the curriculum of the Belgian French speaking Community (Ministère de l'Éducation, 1996). That objective is, on one hand, dedicated to fight drop out and pupils' failure, and on the other, to instigate students to acquire competencies.

The importance of the students' motivation was first highlighted by process-product research. Bloom (1979) showed that affect accounted for 20-25% of the achievement variance in the school environment. In physical education, the role of affective variables was particularly well underlined in an experimental teaching unit. De Knop (1983) showed that the pupils' motivation was higher among those subjects who obtained greater gains in tennis skills.

More recently, the students' cognitive processes and their personal affective characteristics have been identified as mediating variables for the effectiveness of the teaching-learning process (Doyle, 1988). In physical education, Lee and Solmon (1992) pointed out to the role of the pupils' willingness to actively participate and to process the information provided by the teacher.

It is now well accepted that a teacher should develop a class environment where the students would want to learn what s/he considers s/he has to teach them (Florence, 1998). According to Treasure and Roberts (1995), research focusing on the enhancement of motivation towards physical education must be developed. However, this could only be envisaged if clear models were available.

Psychologists were early concerned with the study of motivation. On an educational point of view, the understanding of that complex construct has increased considerably during the last two decades. Drawing their inspiration from that work, several studies have contributed to improve the knowledge on the students' motivation in physical education classes. This paper will review some aspects of those efforts. The following sections will be

examined: (a) the definition and modelisation of the construct; (b) measurement issues of motivation in physical education; (c) the description of motivated and unmotivated students; (d) factors influencing the students' motivation in physical education teaching; (e) conclusions and suggestions for future research on the student's motivation in physical education. This review does not claim to be exhaustive; its priority lies in the identification of the most important indicators.

Definition and modelisation of motivation

Many definitions were proposed. Today, motivation is defined as a force that, in a determined situation, pushes an individual to activate some needs and direct them towards an action perceived as a goal. It is clear that needs and goals are necessary conditions for the development of motivation. Internal and external factors can directly influence its activation level as well as the modification of behaviours in their beginning, direction, intensity and persistency.

Famose (2001) illustrated the large array of models aiming to explain and study motivation. In our opinion, two main theories emerged in the study of this concept during the last two decades: (1) the cognitive evaluation theory as a part of self-determination theory, introduced by Deci and Ryan (1985), and (2) the goal achievement theory developed from Nicholls' works (1984, 1989).

Self-determination theory

According to this taxonomy, individuals possess three innate psychological needs: competence, relatedness and autonomy (Ryan & Deci, 2000). Competence refers to the perception of being effective. Relatedness deals with social recognition and integration, while autonomy is related to the control of behaviours by the individual. Conditions perceived as likely to provide opportunities to satisfy these needs will also facilitate motivation (Vallerand & Losier, 1999). A continuum of three individual's motivational states has been described, based on the context where these needs are met. In this hierarchical model of motivation, the lowest level of motivation, amotivation, corresponds to a lack of personal investment. The medium level refers to extrinsic motivation where the performance of an activity is determined by the pursuit of particular outcomes. The highest level of motivation, intrinsic motivation, emphasises the satisfaction provided by the activity itself.

Intrinsic and extrinsic motivations have been respectively subdivided into three (knowledge, accomplishment, and stimulation) and four (external regulation, introjected regulation, identified regulation, and integrated regulation) distinct types, well documented by Brière, Vallerand, Blais and Pelletier (1995) and Ryan and Deci (2000).

The student's perception of the motivational climate in the class appears as a key factor in the development of motivation. If students perceive the class environment as mastery-focused, they will develop and maintain adaptive motivational patterns. Mitchell (1996) applied the concept of perceived learning environment in a physical education setting. He showed that the students' intrinsic motivation was higher when they perceived a learning environment to be non-threatening to their self esteem and to be physically challenging.

The cognitive evaluation theory emphasizes the role of social factors on motivation. Vallerand and Losier (1999) presented the following motivational sequence: social factors

(e.g., success/failure, type of interaction with peers, educator's behaviour, etc.) influence the psychological mediators of motivation (perceptions related to the innate needs) that act upon motivation, thus exerting an impact on behaviours and feelings.

Similarly, each modification of the environment determining either an increase or a decrease of the individual's perception of competence, autonomy, or relatedness entails changes of intrinsic or extrinsic motivation.

Goal achievement theory

This theory assumes that personal goals influence the thinking process, feelings, and actions of the individuals involved in accomplishment situations. Two orientations were identified, depending on the goal orientation they favour, when achieving an activity: task and ego. An individual will be considered as task oriented when his or her goal exists to acquire a higher mastery or to improve his or her previous level of performance. On the contrary, people trying to perform better than others or willing to show their ability to others, will be characterized by an ego orientation. Goudas, Biddle and Fox (1994) showed that a person could be at any level in one orientation, regardless of the level they are in the other orientation.

Connections between both theories

Links between intrinsic motivation and task orientation have been suggested in sports contexts (Deci & Ryan, 1985). In a physical education setting, the perception of a high level of task orientation also represented a good indicator of student's motivation (Papaioannou, 1995). Studies combining both theories should be actively encouraged. The self-determination theory and the goal achievement theory assign a significant role to the perception of competence, reinforcing the part played by this variable in the development of motivation.

Measurement of motivation in physical education

In an educational setting, motivation was usually measured by the analysis of several neighbouring concepts. Some researchers focused on the interest towards activities or on the subject matter. Others identified motives for participation, but most studies centred on measuring attitude. The concept of attitude is frequently associated to that of motivation. Both are defined in reference to affect and to the assumption that a person's belief about an object influences the development of his/her attitude towards it (Fishbein & Ajzen, 1975). These authors proposed a model where attitude was related to behaviours through behavioural intentions, which were the best predictors of the behaviour, itself.

Silverman and Subramaniam (1999) reviewed the literature on the student's attitude in physical education. They proposed a detailed discussion on the measurement of attitude in physical education. Quantitative and qualitative methods were envisaged. The authors paid attention to the psychometric qualities of the instruments (reliability and validity). They pointed out to the need of the instruments to include the multidimensional conception of attitude based on its cognitive, affective, and behavioural components. The first two seem to be fundamental to the understanding of behaviours. The cognitive component reflects the beliefs of the individual about the attitude object. The affective component concerns the attractiveness or feeling towards the attitude object.

The measurement of the students' attitude towards physical education does usually lay on the importance they give it and on their degree of course appraisal (Delfosse, Ledent, Carreiro da Costa, Telama, Almond, Cloes & Piéron, 1997; Tannehill, Romar, O'Sullivan, England & Rosenberg, 1994). Quantitative methods used questionnaires combining 4- to 7-point Likert scales or selecting isolated specific questions. The data collected through the quantitative method are sometimes combined or refined by interviews and observation (Gonçalves, Carreiro da Costa & Piéron, 2000). This procedure seems to be a powerful approach to identify the most and the least motivated students.

Perception of competence is one of the most powerful variables regarding intrinsic motivation (Spray & Biddle, 1997). Students who succeed in the practice build a sense of competence and self-confidence. They feel pleasure and personal value, which will improve or at least maintain their motivation towards the task (Durand, 2000). Perceived competence was usually measured through Likert scales. Piéron, Ledent, Almond, Airstone & Newberry (1996) used a general index of physical self-competence calculated from seven items, asking the students to compare themselves to other girls/boys of the same age (athletics abilities, grace, flexibility, fitness, speed, strength and courage). Isolated questions were also proposed to identify the perceived level of competence in physical education or in the subject matter taught during an observed lesson (Piéron, Delfosse, Ledent & Cloes, 2001). Perceived competence was also integrated in instruments designed to measure intrinsic motivation (see below).

As mastery goals have been correlated with intrinsic motivation (Ntoumanis, 1998), task orientation goals should be taken into account when attempting to measure the students' motivation. Papaioannou (1994) proposed a questionnaire in which two groups of items were identified as belonging to the "students' learning" and to the "students' competitive" orientations. These items presented similarities as compared to those integrated in the well-known questionnaire by Duda and Nicholls (1991). This instrument was used in a European research program focusing on youth lifestyle (Ledent, Telama, Cloes, Carvalho, Almond & Piéron, 1997).

Some instruments were designed to measure specifically intrinsic motivation. Mitchell (1996) used the Intrinsic Motivation Inventory (IMI). This instrument, comprising 16 items, was initially developed in the sport context (McAuley, Duncan & Tammen, 1989). It assesses, in an additive way, four dimensions of intrinsic motivation: "interest-enjoyment", "perceived competence", "effort importance", and "pressure-tension". Cury, Biddle, Famose, Goudas, Sarrazin and Durand (1996) preferred to work with the adaptation of the IMI proposed by Goudas and Biddle (1994) to better fit to the context of physical education lessons. They selected items assessing the pupils' interest for physical education or perceived competence.

In the sport context, Brière et al. (1995) have developed and validated another instrument designed to measure motivation: the Sport Motivation Scale. Its particularity consists in the operationalization of the different types of intrinsic and extrinsic motivation described above.

In short and based on the preceding information, the measurement of the students' motivation in physical education should at least focus on four dispositional aspects: the cognitive and affective components of attitude, the perception of competence and the task orientation of the achievement goals (Figure 1).

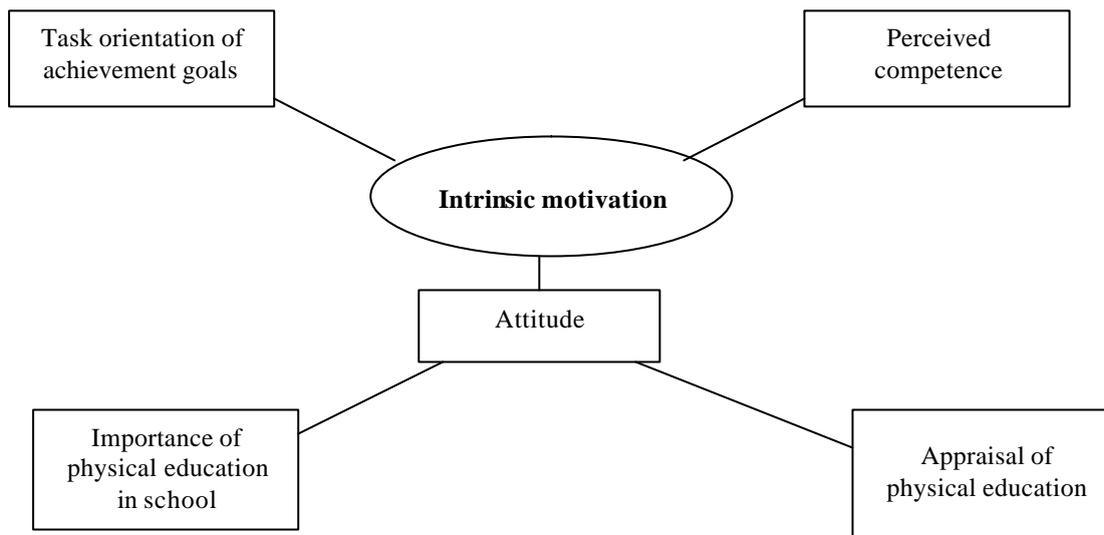


Figure 1 – Fundamental aspects of intrinsic motivation to be measured

Description of motivated and unmotivated students

Teachers are used to commenting upon the motivation level of their students. They are not always aware of what criteria contribute to the establishment of their subjective assessment.

When identifying characteristics of students differentiated by their motivation level, two approaches may be proposed: to collect description based on the teacher' experience or to compare groups of students who are classified at the opposite ends of a continuum.

Cloes, Ledent, Delfosse and Piéron (2001) questioned in-service teachers to identify concrete elements characterizing their most and least motivated classes. Most of them related the students' motivation to characteristics and behaviours that traditionally describe ideal learners. Findings gave additional information to the description proposed by Carlier and Brunelle (1998) from field experience: "... they (pupils) listen during information periods; they ask questions; they are active and react to the teacher's interventions; they stay concentrated on the proposed task and, even they fail, they want to continue to improve; they express their satisfaction at the end of the lesson and ask what will be done during the next session; finally; they talk about physical education after and outside the lesson" (p. 58).

In the Cloes et al. (2001) study, the categories "Working atmosphere" (smiling and self-disciplined students), "Reaction towards activities" (positive comments about the activity in the dressing room, participation in the activity without criticism), "Motor involvement" (students' activity characterized by high levels of quantity and quality), "Time management" (punctual students, managerial effectiveness), and "Involvement" (pupils asking material to practice, pupils coming early to get more time for physical education lesson, pupils showing disappointment when the lesson is over) represented each more than 10% of the answers concerning the motivation criteria. The category "Motor involvement" did not reach that ratio when considering the students' behaviours representing lack of motivation. However, two other categories appeared: "Non-attendance" and "Problem of clothing".

Gonçalves et al. (2000) compared two groups of pupils clearly differentiated on the basis of their motivation towards physical education classes. They analysed the pupils' thoughts (motivation, self-competence, evaluation process, teacher-pupil's interaction, teacher's behaviours, class climate, etc.) combining a questionnaire, a semi-structured interview, a multidimensional observation system and field notes. Significant differences between both groups are summarised as follow:

(1) The most motivated pupils:

- like physical education classes “very much”;
- consider the timetable allocated to physical education “not enough”;
- identify “to improve skill abilities” as the main objective of physical education classes;
- consider the physical education classes as “very important” for their educational process;
- refer to the value of physical activity as a lifetime pursuit in physical education classes;
- do not mention improving fitness and body image as their main objectives in physical education classes;
- express a high level of self-ability in the majority of the activities proposed in the physical education curriculum;
- consider that teachers help them frequently;
- think that teachers sometimes ask them to provide models of performance;
- identify “good teachers” as those who support low ability pupils;
- like the least “teacher management”;
- spend more time practicing motor activities;
- are the only demonstrators appointed by the teachers;
- are the only pupils involved in assisting;
- spent less time in off task behaviours.

(2) The least motivated pupils:

- like physical education classes;
- consider that the time allocated to the subject is enough;
- think that physical education should be optional;
- consider physical education classes as “not important” in their educational process;
- learn nothing in physical education;
- choose improving fitness and body image as the main objectives of physical education classes;
- perceive their self-ability at a low level in most of their activities in the physical education curriculum;
- receive less support from teachers;
- think that teachers “rarely” ask them to provide models of performance.

Gonçalves et al. (2000) concluded that there was a close relationship between the pupils' motivational characteristics, their beliefs about physical education and their behaviours in physical education classes. Motivation can thus be seen as a powerful independent variable, confirming its central place within the mediating variables paradigm. It also explains why teachers give it so much interest. On the other hand, however, motivation is

also considered as a highly modifiable characteristic. From an independent variable perspective, motivation may evolve to a dependent variable condition.

Influencing factors of motivation in physical education teaching

In physical education, the student's attitude and motivation were compared according to differences of internal and external aspects: gender, age and school grade level, ability level on one hand, teacher and environment characteristics, on the other hand. The complexity and diversity of the variables influencing the students' motivation put at risk the understanding of any increase or decrease in involvement and implication levels in physical education classes.

Independent variables associated with motivation may be divided into dispositional and situational categories. The dispositional variables deal with characteristics directly related to the students, while the situational variables concern the context in which they live. Situational variables can be divided into individual and collective categories referring respectively to the characteristic traits of each student (e.g. sport practice during leisure time, motives for sport participation, parents' involvement,...) and features describing the educational context (e.g. motivational climate of the class, teacher's expertise, school characteristics, social environment,). Motivational climate has been referred to six areas corresponding to the acronym "TARGET": Task, Authority, Recognition, Grouping, Evaluation and Time (Epstein, 1989).

Silverman and Subramaniam (1999) reviewed the outcomes of the research on the attitude towards physical education, focusing on comparisons according to variables, such as physical educator and curriculum, gender, age and school grade level, marginality of physical education, and skill level. In Europe, findings from studies at the elementary or secondary school levels (Piéron, Delfosse & Cloes, 1994; Delfosse et al., 1997) showed that the pupils' attitude towards school physical education was quite positive. Comparison according to the grade level tended to underline a deterioration of the situation during schooling. Several differences were identified according to the cultural context of the country where the youngsters live. Boys regularly showed the highest level of attitude towards physical education as compared to girls. When comparing motivational characteristics in low and high achievers, Piéron et al. (2001) pointed out to the fact that the very favourable attitudes came from the students who were considered as good performers.

The students' attitude was not the only motivational variable compared according to situational variables. The mastery dimension of perceived climate (Cury et al., 1996) or perceived learning environment (Mitchell, 1996) were identified as predictors of intrinsic motivation measured by derived versions of the Intrinsic Motivation Inventory. Piéron et al. (1997) showed that perceived competence differed between high and low achievers. The latter felt less competent, underlining the risk of developing a negative attitude towards physical education and thus worsening their intrinsic motivation.

Although such comparisons provide interesting information, these studies focused on isolated variables did not provide an overall perspective of the relationships of all variables involved in the development of the students' motivation. Following Newton and Duda (1999), qualitative approach could be a possible way to better account for the large inter-individual variability of motivation within a class.

Studies conducted by Morey and Goc Karp (1998) or Cloes, Motter, Ledent and Piéron (2002) are recent examples of researches designed to enter in the class specificity and to integrate the myriad of influences that determine motivation towards physical education.

Morey and Goc Karp (1998) selected classes in which students demonstrated low interest in the activity. They conducted, then, a complete case study focusing on three students considered as physically competent, but having either neutral or negative feelings towards physical education. The authors followed the students during nineteen weeks. They observed students in a physical education setting and in other activities. Students, parents, physical education teachers and staff members were interviewed in order to increase reliability.

The physical education programme, the family, the community and the individual were identified as the primary factors influencing the development of negative/neutral attitudes towards physical education. The differences between the students' and the teachers' expectations represented a major factor for loss of students' motivation. Moreover, the lack of teacher's attention towards competent students also contributed to the development of an inappropriate attitude. The data did also show the important role played by the current student's lives. Family problems or characteristics were identified among the most influencing factors.

Cloes et al. (2002) followed a research model based on two axis, taking the intrinsic motivation as a crossing point (Figure 2). On the horizontal axis, the intrinsic motivation is related to situational collective and individual factors. The vertical axis represents the relationship between dispositional factors and intrinsic motivation, on one hand, and between intrinsic motivation and behaviours in classes (e.g. high effort, satisfaction, enjoyment, improvement), on the other hand. The data presented in the study were focused on a boys' class. Two steps were designed: (1) identification of the two most and the two least motivated students on the basis of four dispositional factors (cognitive and affective components of the attitude towards physical education, perception of competence and assessment of task orientation of the achievement goals); (2) interview of the four students and their teacher dealing with individual and collective situational factors (e.g. perceived parents' opinion about physical education, extracurricular sport practice,...), satisfaction and perceived behaviours during physical education lessons.

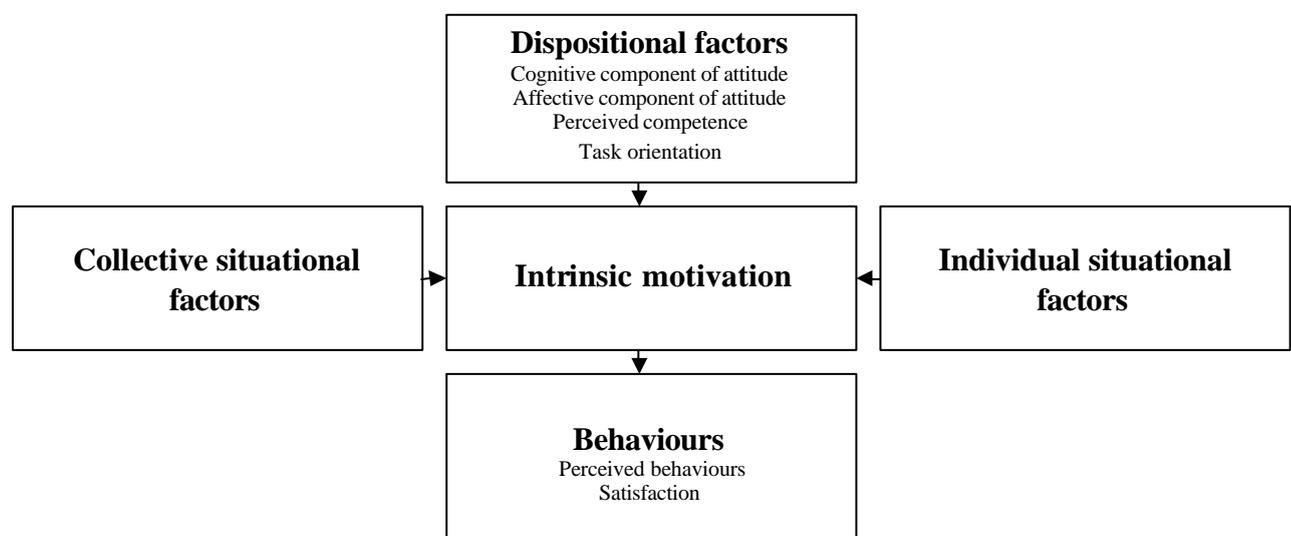


Figure 2 – Two-axis research model on students' intrinsic motivation in physical education

The students' interviews confirmed that their motivation depended on the combination of a large array of factors. Graphic representation of the answers analysed, pointed out that there may be no single model. The teacher was clearly aware of the students' characteristics. Considering that the class was highly motivated despite a poor socio-economic context, the teacher's ability to collect and use information concerning his students was regarded as a determining factor for the development of a motivational climate. It is worth note that the most motivated students underlined that their teacher planned a content oriented towards play and learning. That contribution to the development of a mastery class climate is supposed to induce satisfaction (Welling, Duda & Chi, 1993) and enjoyment (Seifriz, Duda & Chi, 1992). All students mentioned the good relationship they had with their physical education teacher. This points out again to the important role of the educator, who should always pay attention to each individual student.

Conclusions and suggestions for future research on the students' motivation

Students' motivation in physical education classes constitutes a very complex variable that has been most often analysed on the basis of an isolated approach through quantitative studies. These researches compared behaviours of motivated and unmotivated students or the students' motivational characteristics among different groups of students or class environments.

Qualitative studies that have been conducted during the last decade emphasized the inter-individual variability of the factors that influence the development of the intrinsic motivation in students. It seems that this approach is also a promising way to better understand the interrelationship between all the variables concerned. To improve the knowledge about the students' motivation, combining information coming from all the individuals involved in the teaching process (e.g. the teacher, the students, the teaching staff, the parents,...) using several types of data (e.g. behaviours, feelings, objectives,...) represents, most probably, an essential element. This perspective has often been sustained by Maurice Piéron, who was one of the first pioneers of the systematic analysis of the teaching process in physical education and sport. Early, he developed and used multidimensional observation systems, pointing out to the need to simultaneously analysing the various aspects of the teaching tasks.

Another lesson from this "specialist" lays on the applicability of research, which must provide useful information to teachers and teachers' educators. In the case of research focusing on the students' motivation in physical education, it seems, thus, that the time has come to enter into an experimental phase involving the collaboration of teachers. Action-researches planned in the gym should contribute to develop practical information that will help teachers to increase their frame of references. The identification of the strategies developed by teachers to improve students' motivation or to avoid its worsening should also be envisaged. The sharing of effective experiences should be systematically evaluated in pre- and in-service teachers' preparation. Finally, a follow-up of the evolution of the students' motivation during their schooling should be a good opportunity to test the relationship between the teachers' personal motivation and involvement and the pupils' motivation. As it often occurs in the education setting, what is going on in the field is the result of a multiple causality process. Nevertheless, it must be kept in mind that teachers can play a determining role as launching elements, even if the environmental conditions are pitiful. The critical element could be to find which project each student might choose to satisfy his/her innate psychological needs.

No doubt *Research on Teaching in Physical Education* was Maurice Piéron's project. He was most certainly intrinsically motivated towards this research domain. I thank him for having shared this passion with me.

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