



Construction and Validation of an Arabic Questionnaire on the School Dropout Factors (QSD)

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ABSTRACT

This article presents the principles of construction and validation of a questionnaire on the phenomenon of school dropout by illustrating various aspects from a measurement tool prepared to study the different factors of this reality. The standardized theoretical models were adapted and completed for the needs of the study. Educational institutions and, in particular, middle school must establish a clear vision and mission regarding the training that every social professional will demand. School has always played the role of a pupil's education, but the fact that a significant number of secondary students are abandoning their programs without having completed their course of studies, is a specific symptom of an educational crisis that is occurring within them. For this reason, the present study aimed to validate a key tool to establish the causes, whether endogenous or exogenous as to why pupils leave college without having completed their qualification. Different aspects of validation are discussed: The acceptability by studying data concerning the description of school dropout, the validity of constructing a score on the causes of school dropout, the reliability of the components of the questionnaire, the validity of the construct of the tool. The full questionnaire, with the origin of the questions, instructions for the interviewers and coding mode are presented in the methodology. The questionnaire design, consisting to determine the reasons of early dropout Tunisian pupils. The questionnaire took into account the theoretical proposals of several scientific researches. The instrument developed was validated with a sample of 750 pupils (including 675 respondents) in Tunisian colleges with a national dropout rate of 10%. The respondents (317 girls and 358 boys) have an average age of 14.11 years. The 68 items questionnaire was designed to identify, among the population of pupils quitting their school, 7 categories of factors that potentially lead to Tunisian children dropping out, Institutional, Sociological, Economic, Personal, Family, Cultural and Geographical- with their respective subcategories. Knowing the reasons why college pupils abandon a middle school in particular will allow educational actors to analyze administrative and/or academic requirements and take mitigation measures to minimize school dropout.

Keywords: Design, Validation, Questionnaire, Dropout Factors, Middle School, Tunisian Context

INTRODUCTION

The problem of school dropout is very broad and seems to affect several countries, mainly the industrialized countries. European countries are concerned that pupils with difficulties leave school without proper qualifications to integrate into the labor market. In fact, the socio-economic integration of these young non-graduates being more difficult, it affects the economic stability of these countries. "In fact, economic stability and education go hand in hand, in that the economic health of a region is dependent on the literacy rate and numeracy of the population" (Boissonneault & al., 2007). However, many studies have looked at risk factors for school dropout as a multidimensional phenomenon. We now know that it follows a long process of disengagement from school and that it is preceded by negative school experiences (e.g. behavioral difficulties and poor academic performance, Christenson Thurlow, 2004) and as a phenomenon multidimensional (Fortin & al., 2006; Blaya, 2010)

In short, the young person leaves school following a combination of personal and family, school and social difficulties. Today, many researchers agree that dropping out of school is a multidimensional phenomenon resulting from a combination of risk factors interacting with each other. Regardless of conception, school dropout has become a social phenomenon of study (Ferreol, 2015). It has become a problem for the education system and results in a negative impact on social, economic, political and cultural processes, thereby constituting a risk according to the theory of dropout (Fortin&al.2006, Potvin & al. 2006, Blaya, 2010). These theories hold that the more highly qualified citizens there are from universities, the more freedom, more ethical understanding, empathy and higher social values that underpin a democratic society (Ristoff, 2001).

By considering school dropout as one of the factors that affects the accessibility and coverage of middle education, its measurement and study should be part of the continuous process of assessing the efficiency of the education system, the quality of the processes and programs offered by the institutions in order to establish academic and administrative mechanisms to control this phenomenon (Potvin & al., 2006; Acosta, 2009; Fortin & al., 2006; Blaya, 2010).

The purpose of this article was focused first to design and validates an arabic tool to determine the reasons why children drop out in their first years of primary and college education. Secondly, implement the questionnaire in the field to verify the reason why pupil's withdrawal from their middle and secondary cursus. For this reason, to analyze student dropout it is necessary to know the determinants that affect it, which should include the variables considered relevant, to take into account the individuals' own characteristics, their home, their environment, and the educational institution; which in turn are supported by analysis models;

Theoretical Models of School Dropout

Obviously, school dropout is not linked to a single cause, but rather to an interaction of factors. Several factors can explain academic success or, in the other direction, academic failure and dropping out. Potvin & al. (2006) note certain characteristics that allow us to describe the socio-demographic portrait of dropouts. The latter are predominantly male, are more than twelve years old when they arrive at secondary school, attend public schools, live mainly in peripheral regions, or coming from a broken family, absenteeism, poor results, boredom. However, some authors (Fortin & al.2006, Blaya, 2010; Blaya & Fortin, 2011) encourage us to look more closely at the

student's personality to find the profile of the dropout, such as the so-called violence and the tendency to hang out with people who were also at risk.

The most recent studies really trace the relevant reasons for school dropout in the first place. Educational difficulties constitute one of the aspects most directly linked to dropping out of school (Potvin & al. Blaya, 2010). These authors also indicate that dropouts attribute their academic difficulties to the following four reasons: 1) teaching methods and teachers' attitudes; 2) their own learning difficulties: lack of concentration and memory, better aptitude for manual work than for intellectual work; 3) their lack of effort or laziness; 4) delinquent behavior which incites them to have only pleasure. The dissatisfaction of dropouts with school is evident by these authors. This dissatisfaction comes mainly from the memory that dropouts have of the attitude of teachers towards them. As well as the poor quality of the education they feel they have received. The second major factor of dissatisfaction concerns the type and range of courses offered, as well as the subjects that were taught to them when they left school.

The results of their research indicate that, even if several factors are outside of school, academic difficulties are one of the aspects that most influence dropout. The study by (Fortin & al.2006, Blaya, 2010) raises, among other things that, dropping out is not always linked to educational difficulties. In their review of the literature on dropping out, these authors mention that dropouts demonstrate academic results similar to those of other pupils. On the contrary, they differ in terms of their models of social behavior and their perception of academic injustice, the family and economic situation of dropouts is precarious: single-parent family, parents with little education and having a difficult economic situation. More than a third of dropouts have at least one brother or sister or friend who has dropped out of school. Dropouts mention that their parents and the school give up before they drop out.

Furthermore, Blaya (2010) sees rather that the causes of dropping out are multiple: A society imbued with materialist values, the change that is the trademark of the education system, the brutal mutation of the family, the role played by teachers who complain about the inflexibility of the programs and the lack of parental support. She observes that a taste for work is the reason invoked by the greatest number of subjects. It is often the rational motive that a student expresses following academic difficulties that lead him to look for a way out to find positive compensations in life. In addition, integration into the job market, even in imagination, provides young people with the best opportunity to gain independence from parents. It also seems to her that competition between students, within the school itself, is an important factor that can lead to dropout school.

Several authors (Janosz, 2000; Thibert, 2013, Ferreol, 2015, Blaya, & Fortin, 2011). think that boys drop out more than girls because school meets their expectations less and especially values female stereotypes.

At the level of school organization, the transition from primary to secondary is a decisive step to justify dropping out of school. For Ferreol (2015), the school does not use adequate means to successfully integrate students into school activities or to support them during their school year. The potential dropouts perceive secondary school as impersonal, broad and confused. Ferreol adds that the fact that young people do not participate in class or school life, or have difficulty developing

a real feeling of belonging to their school, can have unfortunate consequences. Therefore, it appears that different extracurricular factors or extrinsic at school can affect the dropout rate.

For Rumberger, (1987, 2011), the structural and normative characteristics of schools influence the probability of dropping out measured by the strongest behavioral predictor of dropping out, namely absenteeism. A great heterogeneity inside the school and the weakness of the normative environments contribute to the problems of dropping out. These behaviors are less important in school environments which are more homogeneous. As a result of these consequences, some authors cast the blame on the school since, upon entering secondary school, several students experienced an enthusiasm which quickly changed into anti-social behavior. Since social enhancement is often associated with social occupation and the role played in life. Young people feel abandoned by society and by its institutions which do not leave them room and do not recognize their right to occupy an active role in the society. Students fail to make a connection between what they learn in their lessons and the realities of the outside context. Blaya (2010) and Fortin & al. (2006) estimate that it is this unhealthy school climate that leads students to drop out of school.

Some sociologists highlight the link between the risk of dropping out and the social environment. They most often mobilize analyzes that bring to the for the cultural dimensions attached to a specific social environment. Social background would have an effect mainly through family values, functioning and practices, more or less adequate for academic success depending on social background. In the same vein, language codes, systems of tastes and preferences would place children from working-class backgrounds in a dominant position in the school field, as shown by the work of Basil Bernstein in England in the 1960s, or Pierre Bourdieu and Jean-Claude Passeron in France. Finally, dropping out like school failure would only be a manifestation of a social relationship of domination that goes far beyond the school.

However, two limits can be addressed to an approach that would give an exclusively social explanation of school dropout. First, a form of sociological determinism misses the fact that the majority of children from working class backgrounds succeed in school and leave the education system with a school qualification. Secondly, school dropout also affects children from the middle classes, even from privileged backgrounds, certainly in a smaller proportion than in working-class backgrounds. To go beyond these limits, you have to pay more attention to what is going on at school, as soon as possible to the classroom activities. It is at this level that we can understand how an inequality initial social life is crystallized in terms of academic skills, especially through teacher-student interactions, when, for example, teachers' expectations are lower in terms of learning for children from working-class backgrounds than for those in the most privileged categories, but in reality multiple routes lead to school break-up. Recognizing this diversity of dropout paths therefore allows us to consider the social determinism that leads to it in a more relative manner. School dropout cannot be entirely attributed to early school difficulties linked to an unfavorable social environment, and can be associated with other contextual factors, for example in terms of school experiences (for example the effect of harassment) or factors related to the course of individuals (for example a family breakdown).

Despite the very profound transformations that the school system has undergone in developed countries, the social inequality of the risk of dropping out of school between social groups is particularly stable in the long term. The current level of inequality between children of workers and

children of managers and intermediate professions is the same today as in the 1950s. This observation, which is particularly severe in relation to the objective of democratization of the education system pursued by all governments over this period, must be taken with caution. It is nonetheless true that inequalities in access to a diploma are decisive in the subsequent career paths of individuals, particularly in the labor market. From this point of view, the European education system is singularly lacking in its mission of contributing to equal opportunities (Bernard, 2013). We can, thus, note that children whose father is a worker are more likely to leave school without a diploma than those whose father is a manager. Hence, an inequality according to socio-professional category. (Afsa, 2013).

Beyond the individual effect of the social environment, it also acts through the context of life (neighborhood) or schooling (social composition of schools). Again, the inequalities are found to be greater than that recorded elsewhere (Arrighi, 2012). More generally, the sociological characterization of a territory is strongly linked to the proportion of young people without a diploma. We are talking here about dropping out of school in relation to inequalities by area of residence.

Another indicator of inequality is the level of education of the parents. There are considerable differences in this area, thereby demonstrating the inter-generational reproduction of educational inequalities. What can be translated into dropping out of school according to the cultural capital of the parents, (Bourdieu, 1979). Research in the United States shows that the pupil's immediate social environment, understood by the characteristics of the parents, has a significant effect on the risk of dropping out. In general, this effect is approximated on the basis of parents' income, the social status of the professions they exercise and their level of diploma. All of the research is unanimous as to the effect of socio-economic background on the risk of dropping out : this risk is greater for families with the lowest socio-economic status, measured by the previous indicators, (Lofstrom, 2007). The social environment cannot be reduced to the family context. The school itself can be characterized by its social composition. The strong inequalities in the risk of dropping out of school observed as a function of the parents' level of diploma suggest that the cultural dimensions attached to the social environment are decisive. However, the empirical studies previously cited show that significant family involvement (homework help, control of school work), positive expectations towards school, responsiveness parents with academic difficulties, as well as an encouraging and rewarding attitude, reduce the risk of dropping out. The distance of the working class from school would distance them from this educational model, not in opposition to this model, but essentially reducing it to a normative system (Lahire, 1995). Social background would therefore have an effect mainly through family values, functioning and practices, more or less adequate for academic success depending on social background. In the same vein, language codes, systems of tastes and preferences would place children from working-class backgrounds in a dominant position in the school field, as shown by Bernstein's work in England in the 1960s, or from Bourdieu and Passeron in France. Ultimately, dropping out like school failure would be just one manifestation of a social relationship of domination that goes far beyond the school. Furthermore, the educational difficulties of many children can be understood in the light of the precariousness and deterioration of the living conditions of a part of working-class families, (Millet & Thin, 2005).

However, two limits can be addressed to an approach that would give an exclusively social explanation of school dropout. First, a form of sociological determinism misses the fact that the

majority of children from working-class backgrounds succeed in school and leave the education system with a school qualification. Furthermore, recent work highlights the generalization of aspirations for academic success in all social circles, (Poullaouec, 2010). Second, school dropout also affects middle-class children, and even those from privileged backgrounds. It is very clear when we look at the socio-professional origin of the pupils attending experimental establishments which have developed in response to the problem of school dropouts. Recognizing this diversity of dropout paths also allows us to consider determinism in a more relative way that, leads to it. School dropout cannot be entirely attributed to early school difficulties linked to an unfavorable social environment, and can be associated with other contextual factors, for example school experiences (the effect of harassment...) Or factors related to the course of individuals (for example a family breakdown). Thus, there are more young people from favored categories in the "disengaged" group, more young people of popular origin in that of the "disconnected". These different paths, however, always reveal a difficult relationship with school, in various forms: refusal of the rule or the aims of the school world, lack of meaning given to learning, or feeling of abandonment. The challenge of school dropout is at this level that of the organization of the school.

Another important factor can explain the phenomena of school dropout. The role of family culture in the transmission of values and in the promotion of school is therefore, to be taken into account. This data shows a significant variation in the influence of cultural causes according to students in social spaces. As has been clarified in the literature, the concept of cultural dropout is associated with the phenomenon of school dropout. This concept takes on a negative value, and can, thus, contribute to the stigmatization of students qualified as cultural dropouts. Does the literature on the school choice process support such a concept?

Several studies note the remarkable influence of culture on students' school dropout (Bosetti, 2004 ; English, 2009). However, researchers have different definitions of culture. Bosetti (2004) states that the common values and beliefs between families and school constitute one of the most determining factors of school motivation. According to this researcher, culture is relative to all of the parents' values. In the same vein, English (2009) is inspired by Bourdieu and the concept of cultural capital. This researcher emphasizes the importance of developing cultural capital in schools. She specifies that the fact that the school promotes the "right" (p. 90) cultural capital in relation to the different values of the family is a factor considered a priority in the child's educational path. Australian schools implement programs specializing in arts, music and certain sports to promote the idea that their students will have a better school life.

Bulman (2004, p.493), for his part, considers that "*culture must be seen as the fabric which enables each family to give meaning to education*". He specifies that one cannot suppose that culture is only the ethnicity, the sex, the social class or the religion of a person, but that it is rather the "tool kit" with which it interacts in his daily life. Bulman (2004) maintains that these cultural tools refer to emotional and intrinsic motivations that come into play during the school process. The socio-cultural aspect of school dropout is, therefore, present in several different ways depending on the student's social context. The data collected in our survey seem to corroborate these findings.

Finally, to close the analysis of this theoretical model of the concept of dropping out of school, we highlight a final factor, that of the great geographic disparities in emerging countries which are now revealed to be very small. However, the educational difficulties of the children are not resolved:

judging by the results of the assessments made in primary school, their inter-regional disparities do not seem to have been resolved. Premature school dropout in rural areas gives a first idea. According to the ministerial report for 2019, it is estimated that 110,000 young people leave the education system without qualification. However, the inequality of opportunity to access a high level of education fairly accurately reflects the social inequalities in Tunisian society. These distortions between the regional origins of rural college students and those of urban college students become more marked as one advances in the school curriculum.

Consequently, the scientific writings (MEN DEP, 1993; Herin, 1990, 1993), which stipulate that access to school is essentially linked to the economic and socio-cultural capital of families of origin. These disparities draw regional groups where the prospects of young people for having a qualification are unequal. The current configurations of these disparities refer to the geography of the baccalaureate diplomas obtained and the difference noted between students in the rural and urban areas. The chances of obtaining the baccalaureate, and pursue higher education therefore remain uneven from region to region. Knowing that these geographic inequalities are rooted in the economic, social and cultural realities of regional territories inside the country. These geographic inequalities reflect the differences in the composition of regional populations. They appear in the dropout frequencies without qualification. However, we put forward another hypothesis which stipulates that the interpretation of school geographic disparities is to be sought in the diversity of social structures of the national territory which seems the most plausible. This hypothesis raises the question of the disadvantage of the countryside compared to the cities with regard to access reference schools in emerging countries. Rural youth do not have the same opportunities to continue and complete high school as urban youth. Without ignoring the role of distance from school, the additional costs and the personal difficulties they represent for certain young rural people. It would be risky to pretend that it is the geographic distance from the establishments that are the main cause of the disadvantages of training some young rural people.

To conclude, school dropout is defined as leaving the education system without qualification at the end of secondary school. Indeed, it is a socially unequal phenomenon, as shown in Figure 1. However, it results from a multidimensional process which takes place over the whole of schooling. Consequently, dropping out of school in Tunisia deserves a better understanding of its mechanisms and processes.

Determinants of school dropout

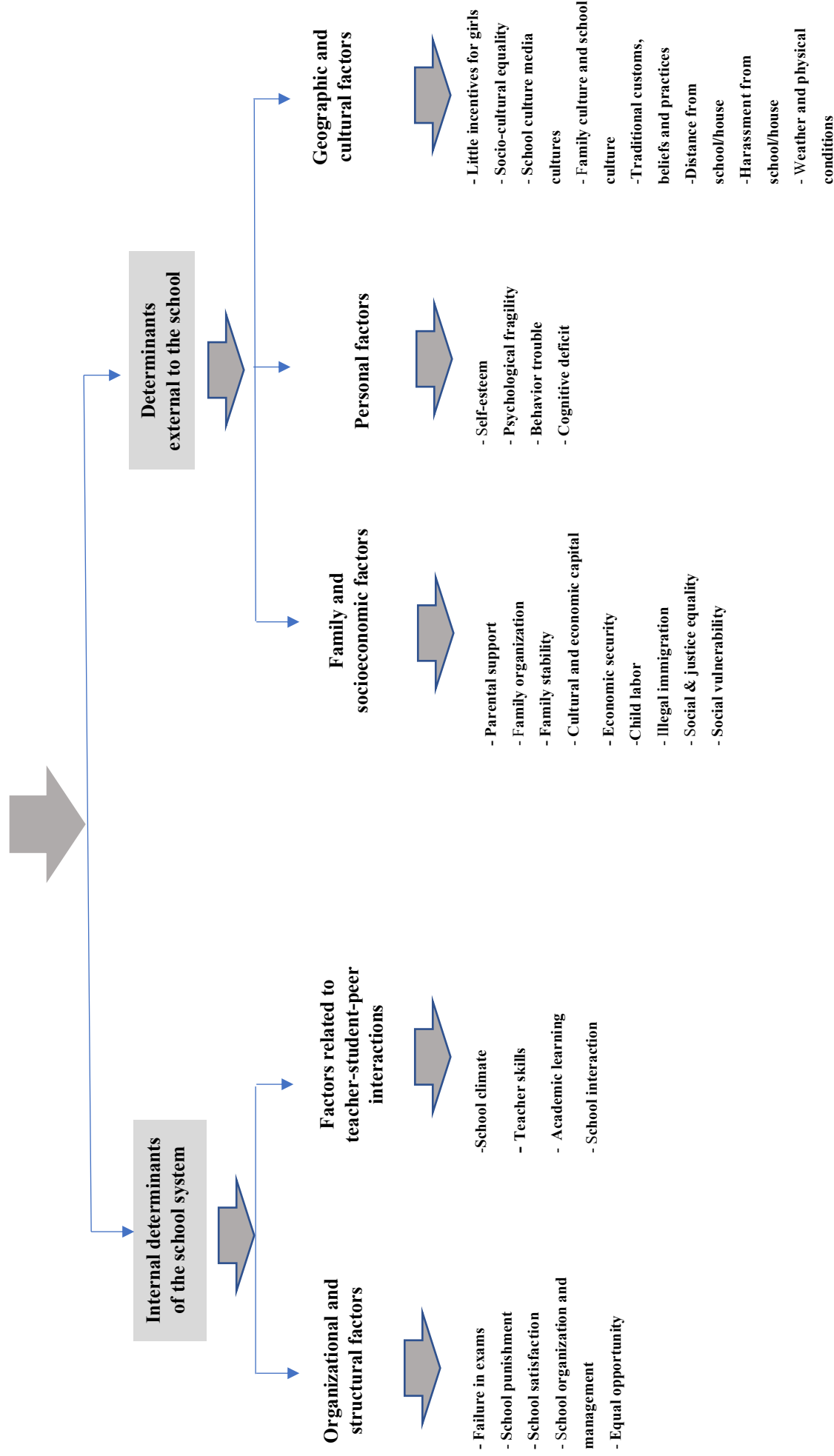


Figure 1: Conceptual Variables Identified in the Literature Review and Used in This Study as Possible Determinants of School Dropout (Gilles & al., 2012 ; Blaya, 2010, Fortin & al., 2006, Potvin & al. 2006)

The model presented, in figure 1, is, therefore, an attempt to organize a set of factors associated with the risk of dropping out and to schematize the relationships they have with each other. The central hypothesis of this model is that the more proximate factors have more weight and at least partially mediate the effect of the more distal factors. The empirical part of this study aims to test the relevance of this modeling in a population of Tunisian students.

The purpose of this article is to present the stages of development and validation of a tool for evaluating the causes of school dropout (QSD), based on the theoretical models already mentioned above. This article is also intended to be a methodological guide for researchers and education professionals wishing to develop new measurement instruments that meet high quality standards.

MATERIALS AND METHODS

Dussault et al. (2007) propose a simple and rigorous seven-step questionnaire development and validation method inspired by DeVellis (2003), as illustrated in Figure 1. The first five correspond to the development and the last two correspond to the validation process : 1- determination of the measurement object in the light of a literature review, 2- generation of items, 3- determination of a measurement format, 4- verification of the clarity of the items, 5- pretest, 6- analysis of items, 7- proofs of construct validity to which would be added that of concomitant validity, reproducibility and response to changes, (See figure 2).

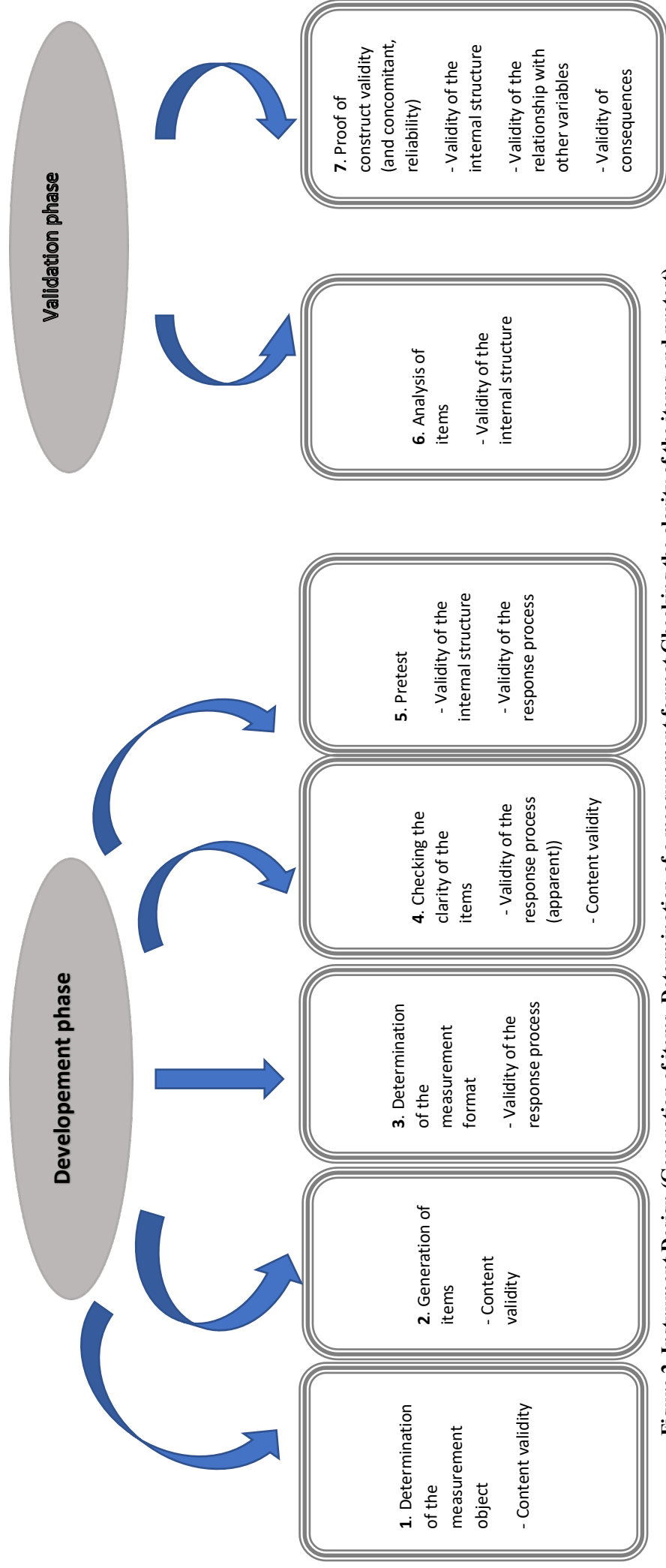


Figure 2. Instrument Design (Generation of items, Determination of a measurement format Checking the clarity of the items and pretest)

Before undertaking any work to develop a measurement tool, it is first necessary to define what will and will not be evaluated (DeVellis, 2003). In this perspective, a review of the literature relevant to the subject treated was carried out in order to differentiate the concepts discussed. The target population must also be determined at this stage. The design of the instrument was determined based on the theoretical "models" of school dropout, which represents a phenomenon inherent in the lives of students while maintaining a relationship with the dynamics of study management, academic performance and effectiveness of the education system (Diaz, 2008). Once the concepts covered in the questionnaire are well established, the creation of items is possible, but must follow several basic rules. First, all items must be related to the objectives of the assessment (DeVellis, 2003). They must also be concise, present a level of language adapted to the target population and contain only one idea. Multiple negatives and ambiguous pronouns should also be avoided. By respecting the different basic rules, a bank of 68 items inspired by theoretical models was built for the QSD. It brought together questions relating to the different theoretical groupings proposed above, namely: school, family, economic, social, psychological, geographic and cultural.

The determination of the form that the responses will take must be considered in relation to the evaluation goals pursued in the questionnaire. A knowledge questionnaire and an attitude questionnaire do not have the same type of questions. At this stage, the most appropriate measurement format should be chosen for the desired questionnaire, such as "true or false" questions, multiple choice questions, Thurstone or Likert type scales (DeVellis, 2003; Tousignant & Morissette, 1989).

As the QSD is a questionnaire which aims to inform the educational actor about the causes of dropping out of school, items of the "true or false" type were favored. This type of questionnaire is quicker to complete and easier to understand and analyze for the education professional. The "other" option was part of the response choices for all questions to reduce the amount of missing data.

The verification of the clarity of the items has two elements which are added to the proofs of validity of a measuring instrument. The apparent validity and content constitute a first test for the items created. The apparent validity consists in presenting the items to a representative sample of the population targeted by the evaluation. It aims to collect comments on the adequacy between the concepts discussed, the formulation of items in relation to the goals pursued by the questionnaire and the understanding of the vocabulary and the level of language used (DeVellis, 2003). Content validity differs from apparent validity by the composition of the group to which the items are presented. The objective of content validity is to ensure that no aspect of the concepts discussed has been overlooked according to the theoretical foundations specific to this field. The comments obtained from the sample of the target population allow the researcher to modify or delete the problematic items and to add others if necessary (DeVellis, 2003).

The questionnaire was designed as a self-assessment tool, using colloquial and simple language in the reformulation of the different declarations in a total of 68 elements.

The pretest consists in testing the questionnaire with a new representative sample of the target population. Its purpose is to verify that each of the items is relevant in the questionnaire. The pretest gives indications on the items that need to be modified or completely deleted. It can also be used to

check whether theoretical groupings (also called categories, dimensions or factors) are found during data analysis (DeVellis, 2003). The number of participants to be included in the pretest was the subject of several discussions. The higher it is, the higher the power of the analyzes and the easier it is to avoid measurement errors. It is therefore necessary to seek to obtain the highest participant-item ratio as far as the research conditions allow (DeVellis, 2003).

The preliminary version of the QSD was tested on a population of students from a college in the Sfax region of Tunisia. A total of 25 boys and 13 girls, aged 14 years on average, answered the paper questionnaire for the first time. Analysis of items (discrimination index and adjustment to the Rasch model) (Bond and Fox, 2007) made it possible to identify items to modify or remove to avoid redundancy. The confirmatory factor analyzes suggested a better fit to a multidimensional model as suggested by the theoretical models.

Following certain modifications which were added to our measurement tools, the number of items is increased from 52 to 68.

Participants and Procedure:

The participants in this study were pupils in the 7th, 8th and 9th years of basic education (3 years of middle school before going on to secondary school in Tunisia). In the Tunisian school system, these years come after a passage of 6 years in primary and prepare them for an orientation in different fields which give access to specific courses in secondary. Available data show that this distribution is largely based on school failure rather than on a positive choice of students (Ministry of National Education in Tunisia, 2019). This moment of school itinerary seemed particularly interesting to us in terms of preventing the risk of dropping out.

A total of 750 students from 24 Tunisian zones located in urban and rural areas participated in this survey. After deleting the poorly completed questionnaires and missing data (10 % of the initial sample), 675 pupils were retained in the analyzes. These participants are between 12 and 15 years old, with an average age of 14.11, and are distributed equally by gender (47% of girls).

The data were collected by an anonymous written questionnaire. The questionnaire was administered at the school during a lesson. In some classes, based on the advice of the teachers, the questions were read aloud to ensure their understanding by the students. The delivery was made by a person outside the schools, which guaranteed the students the confidentiality of their answers vis-à-vis the school staff. The questionnaire was administered by doctoral students in sociology from September 2019 to January 2020 in the various Tunisian colleges. This protocol described how to present themselves to students, such as, the objectives of the study, the rules of ethics to be respected, the mission the instructions and the answers to be given to the student's possible questions when taking the questionnaire. The student's participation was voluntary, after presentation of the objectives and instructions.

Table 1: Characteristics of participants (n = 675) in the validation of the QSD according to social space (rural / urban)

Characteristics Social space	Age	Family composition	Siblings	Employmentstatus	Level of education of parents	Type of residence				
Rural		2 to 9	2 to 7	Farmer, 20%	Out of school 40%	Popular 29%				
				Artisan 3%			Schooled with little endowed 20%	Mixed 51%		
				Upper frame 2%					Academically moderately endowed 15%	Bourgeois 20%
				Official 25%						
Employees 15%										
Worker 17%										
Retirees 7%										
Inactive 11%										
Urbain	12 at 15 ans	2 to 5	1 to 3	Farmer, 3%	Out of school 20%	Popular 25%				
				Artisan 20%			Schooled with little endowed 20%	Mixed 45%		
				Upper frame 15%					Academically moderately endowed 25%	Bourgeois 30%
				Official 32%						
Employees 7%										
Worker 15%										
Retirees 3%										
Inactive 5%										

Measurement

Most of the measures are based on existing scales, the formulation of which has been adapted to the context of this study. A pre-test was carried out on a sample of pupils in grades 7, 8, 9, in Sfax context. In addition to the pre-test, a focus group on the questionnaire was conducted with a group of students with the same characteristics as the target sample. The pupils were generally very receptive and their remarks made it possible to adapt the questionnaire, as well as the handing protocol.

This study is part of a quantitative research methodology. The questionnaire used is a general information tool, it includes socio-demographic indicators such as age, sex, social background, civil status, etc. Also, we find the following variables: causes of school dropout, such as family social, economic, school, and personal etc., In this case, the research data are therefore, of ordinary in nature.

The choice of a quantitative study is justified, considering that the objective is to deepen the understanding of the complex phenomenon of dropping out of school by probing the perceptions of the students themselves. It is a descriptive search. The emphasis is therefore placed here on the relevant details which will make it possible to obtain contextual information making it possible to describe as faithfully as possible the perceptions of college students with regard to dropping out of school. This questionnaire measures and describes the various causes perceived by middle school students in the Sfax region. Its abridged version includes 69 statements distributed equally on seven (7) subscales: 1) educational factor, 2) family factor, 3) social factor 4) economic factor, 5) personal factor, 6) cultural factor and 7) geographic factor. The answers are of true or false type.

Instrument Validation

The analysis of items is at the heart of the development of a measurement tool (DeVellis, 2003). It aims to identify the questions that must be kept or removed from the questionnaire based on statistical indices in order to improve the information obtained (Laveault and Grégoire, 1997). It should be noted that at this stage, the theoretical foundations supporting the design of the questionnaire continue to play an important role. The statistical indices may then seem less satisfactory, but it is also important that the questionnaire is based on clinical reality.

Three procedures were favored for the analysis of QSD items, namely the discrimination index, the analysis of internal consistency and the analysis of the adjustment of items to the Rasch model. The discrimination index is determined by the item-total correlation coefficient. It indicates to what extent an item succeeds in discriminating between respondents with a high score and those with a low score. The higher the coefficient, the more discriminating the item. The internal consistency analysis consists in ensuring that the items related to the same concept react constantly for all respondents. These two procedures belong to the classical test theory which encompasses many other possible statistical tests (Crocker and Algina, 1989; Laveault and Grégoire, 1997). The item response theory, for its part, allows for a more in-depth analysis of the items since it places the degree of difficulty of the items and the skill level of the respondents on the same scale (Bertrand and Blais, 2004). Several models are drawn from this theory, but the simplest, and the most used, is certainly the Rasch model which postulates that a single latent trait is responsible for the variance of the items and that all the items have the same discrimination (Bond and Fox, 2007).

Here will be seen the proofs of the validity of internal structure (construct validity and reproducibility), of relation with other variables (concomitant validity) as well as proof of the validity of consequences (response to changes).

The determination of the validity, therefore of the value of a measurement tool is done by the accumulation of evidence. Some have already been collected during the previous stages, but the most important proof of validity is demonstrated at this stage. On the one hand, construct validity constitutes the essential element of validity for specialists in psychometry and edumetry (DeVellis, 2003). It consists in determining to what extent the items of the questionnaire are organized in the same way as the theoretical concepts supporting them (DeVellis, 2003).

On the other hand, the reproducibility of the results of a measurement tool over time as well as its response to changes constitute proof of its reliability, therefore of the validity of its internal structure and the validity of consequences. Finally, the concomitant validity aims to determine whether the questionnaire assesses what it claims to measure by comparing it to a standard measurement. However, as the new questionnaire is intended to be an improvement over the existing tools, a moderate correlation was expected to obtain proof of concomitant validity. In its initial validation, it presented a satisfactory internal coherence **coefficient (0.82) and an intra-class correlation coefficient (0.70)** with populations made up of college pupils from all the governorates of Tunisia.

Despite the travel difficulties of the investigators in the Tunisian regions, the students who participated in the validation instruments filled out and handed in their questionnaires personally.

To validate the reliability of the results descriptive and inferential statistics were used from data obtained in the field to make decisions on the inter or intra factors causing dropout.

Statistical analyzes

The discrimination index is considered problematic if it is below 0.2 (Crocker and Algina, 1986; Nunnally and Bernstein, 1994). Since dichotomous data were used, the item-total point-biserial correlation was used for the analyzes. Internal consistency is evidenced by the value of the coefficient of the Kuder-Richardson formula 20 (KR-20). This formula is preferred to Cronbach's alpha in the case of dichotomous data. Values between 0.7 and 0.9 are recognized as having a good level of internal consistency (Crocker and Algina, 1986). The analyzes were carried out using SPSS 28 & AMOS software.

Analyzes with the Rasch model were performed using WINSTEPS software (version 3.32) (Linacre and Wright, 1999). The fit statistics are an indication of the adequacy between the one-dimensional Rasch model and the data collected. WINSTEPS software provides two fit statistics for items: infit and outfit (Linacre, 2002; Wright and Master, 1982). The infit presents the weighted information of the mean of the squares of the standardized residuals between the observed and expected responses according to the variance of the item and the total variance. The outfit, used as an additional reference, provides the average of the squares of the standardized residues, elevating the residues squared before averaging to prevent negative residues from compensating for positive residues. A value of 1 to either of these statistics indicates a good fit of the item to the model and a value ranging from 0.5 to 1.5 is considered satisfactory (Linacre, 2002). A value ≥ 1.5 indicates a lack of homogeneity between the items while a value ≤ 0.5 represents redundancy between the items (Bain, Pini, Scallon and Bertrand, 1996).

Confirmatory factor analyzes from structural equation models were performed using EQS 6.2 software (Bentler, 1995) to obtain proof of the construct validity of the QCA-PA. Various adjustment indices were used to compare the theoretical matrix with the empirical data: the Satorra-Bentler chi-square (the chi-square statistic used for non-normal data) and its ratio on the degrees of freedom ($SB\chi^2 / dl$), the Comparative Fit Index (CFI), the Non Normed Fit Index (NNFI) proposed by Tucker and Lewis (1973) and the root of the mean square of the error Mean Square Error of Estimation (RMSEA) recommended by Steiger (Steiger, 1990). The modified version of the Akaike Information Criterion (Consistent version of the AIC, CAIC), proposed by Bozdogan (Bozdogan, 1987) was also used to compare the models with each other.

A value of $SB\chi^2 / dl$ approaching 2.0 represents a good fit of the model to the empirical data, while a value of 5.0 indicates an acceptable fit. Models showing a CFI and NNFI above 0.9 are generally considered adequate (Schumacker and Lomax, 1996), while those with values of 0.95 are considered to be appreciable (Marsch, Ellis, Parada, Richards and Heubeck, 2005). An RMSEA value below 0.08 is acceptable, while a value below 0.05 is appreciable (Browne and Cudeck, 1993). As for the CAIC, the most appropriate model should be the one with the lowest value (Bentler, 1995). Finally, considering that the data analyzed did not respect the normal law, the method of estimating the maximum likelihood (Maximum Likelihood, ML) and its robust option were used. Given the number of participants and the number of parameters to be estimated, the use of indicators was required for each factor. Two indicators were constructed for each of the factors. Marsch, Hau, Balla and Greyson (1998) have shown that their use is as effective as the use of all items to assess the

adequacy of theoretical models to the data. For each factor, the indicators were designed randomly. Indicator 1 was obtained by the average of odd items and indicator 2 was obtained by the average of even items. In order to optimize the factor structure of the models tested, the Lagrange multiplicative test (LMTEST), which proposes the addition of parameters, has also been used (Bentler & Dijkstra, 1985).

In order to obtain concomitant proof of validity, Spearman correlations were made between the total QSD scores at each of the measurement times. Since a coefficient that is too high would demonstrate too much similarity between the two runs, a coefficient between 0.4 and 0.8 is considered acceptable to demonstrate good proof of concomitant validity (Streiner and Norman, 1995).

In order to collect other measures of reproducibility and response to changes in QSD, an ANOVA with repeated measurements was performed by analyzing the evolution of the average score of the participants at each measurement time

RESULTS AND DISCUSSION

Implementation of the Instrument

Tool was developed to predict which of the 7 factors see Table 1 and 2 identified in the literature and contemplated in its design, emphasized more in the dropout manifested by students. Once the assessment phase of the understandability of the instrument is done and made recommendations arising from this phase, we proceeded to the actual implementation of the questionnaire.

The school dropout questionnaire was performed on a middle school population—53% males and 47% females—from all tunisian region from september 2019 to january 2020.

Below are, first, the results derived from the implementation of the questionnaire, analyzing all the factors, and second, contextualizing the instrument to the overall analysis of the 7 factors associated with dropping out attempting to identify what type of model was followed by the study population. Considering that the seven factors of dropout, it's were scattered among the 68 items of the questionnaire as shown in Table 2. From the analysis of the data obtained in the field, it was possible to group the items by factors to analyze its higher or lower incidence in the dropout manifested as presented in the following paragraphs.

Table 2. F Fisher Test (ANOVA) for Analysis of School Dropout Type

<i>Factors</i>	<i>Average</i>	<i>Variance</i>		
School causes	1.98	1.65		
Family's causes	1.80	1.28		
Social causes	2.59	2.53		
Economic causes	2.21	2.21		
Personal causes	2.00	1.76		
Cultural causes	2.03	1.78		
Geographic causes	2.57	1.30		
Origin of variations	<i>Sum of square</i>	<i>Degree of freedom</i>	<i>Calculated value Fcal</i>	<i>fteo</i>
Among the sub-factors	158.46	4		
Within the sub-factors	5090.30	2793	21.73	2.38
Total	5248.76	2797		

Discrimination index

Table 2 presents the results of the item analyzes obtained for each of the QSD items at the first measurement time (T0). For the sake of brevity, similar results having been obtained at other measurement times are not presented. no item had zero variance, all participants having obtained the correct answer, their index of discrimination was therefore zero. These items were removed from subsequent analyzes. They were still kept inside the QSD. It is therefore normal for all to master them. Other items showed unsatisfactory discrimination indicators at T0 according to the criteria set. They were distributed equally in the questionnaire and nothing seemed to link them a priori. For the same reasons, they were kept. Particular attention was paid to them for the rest of the analyzes.

Table 3: Results of the analysis of items at T0 of the QSD items

Items	Rasch model				
	M	D.S	Ind. Discr.	Infit	Outfit
School causes - Failure in exams (no cognitive presence in class, no value given to education, evaluation) - Punishment and insults in school - Satisfaction with school , (difficulty and not interested in study, bad relationship with teacher, bad infrastructure) - Academic learning (little relevant, far from real life, seems to miss the concerns of adolescents) - Ability to buy stationery and books - Equal opportunity (weak academic aspirations) - Adequate school climate	0.82 0.91 0.86 0.81 0.72 0.77 0.99	0.39 0.29 0.48 0.39 0.42 0.43 0.10	0.34 0.14 0.31 0.34 0.34 0.34 0.14		
Family's causes - Parental support (parent's illiteracy, household chores, looking after the younger siblings, parents' prohibition to go to school) - Family organization (helping family, large number of children) - Stability in family (deteriorated parent-adolescent relationship, authoritarian parenting style, difficult family climate life) - Cultural and economic capital	0.65 0.99 0.90 0.96	0.48 0.14 0.30 0.20	0.36 0.14 0.37 0.53		X
Social causes - School interactions (gender discrimination in school, humiliation by friends in school) - Regional disparities - Problematic behaviors (alcoholism, drug addiction, theft, vandalism) - Social inequality - Social vulnerability (labeling, gaps in social skills)	0.97 0.97 0.97 0.90 0.81	0.17 0.29 0.17 0.30 0.39	0.17 0.40 0.06 0.37 0.34		X X
Economic causes - Economic insecurity and scarcity (financial constraints, professional instability of parents) - Child labor (agricultural work (engagement in seasonal job and in child labor)) - Go for illegal immigration - Go for parallel trad - Rural exodus	0.48 0.29 0.24 0.98 0.52	0.50 0.46 0.43 0.14 0.50	0.20 0.29 0.24 0.23 0.34		X

Personal causes - Self-esteem (negative school climate, little academic commitment) - Psychological fragility (depression, dramatization, isolation) - Behavior trouble (absenteeism academic difficulties, conflicted relationships) - Cognitive deficit (lack of motivation, low concentration and attention)	0.61 0.73 0.92 0.89	0.39 0.49 0.27 0.31	0.42 0.32 0.22 0.15		X
Cultural causes - Incentives for girls (early marriage for girls - Socio-cultural equality in terms of academic success - School culture competes with media cultures - consistency of family culture and school culture - Traditional customs, beliefs and practices	0.39 0.75 0.42 0.66 0.95	0.49 0.43 0.50 0.48 0.22	0.09 0.32 0.36 0.35 0.13		
Geographic causes - Distance (school far from home, lack of public transportation and facilities) - Harassment from school/house - Weather conditions (intense rain, river, mountain forest, presence of wild animals) - Regional physical disparities	0.99 0.57 0.62 0.37	0.10 0.50 0.49 0.46	0.14 0.23 0.40 0.48		X

Internal consistency

The internal coherence coefficients for each of the seven categories proposed by the theoretical foundations and for each of the two QSD1 examinations, in addition to those of the QSD2, are presented in Table 4. For QSD1, the coefficients were between 0.64 and 0.80 at each of the two measurement times when calculated for the entire questionnaire. The coefficients were satisfactory when the categories were considered separately, indicating that they are rather descriptive in nature. The coefficients of QSD2 were also satisfactory and justified its use as a standard measure.

Table 4 : Internal consistency (KR-20)

Facteurs	T0	T1	T2	T3
School	0,56	0,64	0,41	0,35
Personal	0,40	0,55	0,34	0,23
Social	0,54	0,61	0,63	0,60
Family	0,49	0,56	0,09	0,19
Economic	0,34	0,23	0,56	0,64
Geographical	0,41	0,34	0,40	0,55
Cultural	0,34	0,40	0,35	0,63
Total QSD2	0,78	0,84	0,72	0,71
Total QSD1	0,75	0,80	0,66	0,64

Rasch model

Table 4 indicates the items which obtain satisfactory statistics following analyzes according to the Rasch model at T0. Again, results similar to other measurement times are not presented for the sake of brevity. All the items identified as having a satisfactory discrimination index, none of them are considered to be problematic according to the statistics reported. Once again, we have decided to keep all items inside the QSD. These are essential elements of knowledge on the causes of dropping out of school and it is necessary that those involved in education know if the pupils have mastered

them. The problematic QSD items are adequate according to the discrimination index, which therefore did not reflect a recurring problem from one analysis to the next.

By referring to scientific criteria proven by Nuviala et al., (2008) who indicates that if the Cronbach's Alpha is greater than 0.9 the measuring instrument is excellent; in the range of 0.9 to 0.8 the instrument is good; between from 0.8 to 0.7 the instrument is acceptable; in the range between 0.7 to 0.6 the instrument is weak; between 0.6 to 0.5 the instrument is poor; and if less than 0.5 is not acceptable; it is concluded that the questionnaire as an instrument to determine the factors associated with college dropout reveals its excellent level of understandability for which it was designed, (See table 5).

Table 5: Distribution of Items by Factors for the Instrument Designed

Factors	Item number	Number of items	Cronbach's Alpha
School causes	1-2-3-4-5-6-7-8-9-10-11-12-16-17-18-19-20-43-44-45-46-47-48-49-50-51-52	27	0.87
Family's causes	29-30-31-32-33-34	6	0.90
Social causes	58-59-60-61-62-63-64	7	0.87
Economic causes	21-22-23-24-25-26-27-28	8	0.91
Personal causes	35-36-37-38-39-40-41-42-65	9	0.85
Cultural causes	53-54-55-56-57	5	0.91
Geographic causes	13-14-15-66-67-68	6	0.90
Total		68	0.89*

*Global Cronbach's Alpha.

Factor Structure Analysis

Table 5 presents the QSD2 data fit indices for the models tested at T0. Similar values were obtained at other times, but are not presented, always for the sake of brevity.

The M1, with seven correlated factors, presented a good fit of the model to the data, a substantial CFI as well as an acceptable NNFI and RMSEA. However, it was this model that had the highest CAIC index. The M2, which included a second-order factor, had slightly lower fit statistics, a good $SB\chi^2 / dl$, an acceptable CFI and RMSEA, but an NNFI below the set acceptability threshold. His CAIC was lower than that of M1. Regarding M3, although the CAIC indicated that this is the best fit model, CFI, NNFI and RMSEA were not acceptable. For this model, analysis of the LMTEST suggested adding a correlation between the error terms of indicators 5 and 6. As they corresponded to the same domain suggested by the literature, this link was added. The M4, that is to say the M3 optimized in the light of the LMTEST, then presented the lowest CAIC, an RMSEA meeting the appreciable threshold as well as values of CFI and NNFI respectively appreciable and adequate. Figure 2 presents the standardized solution of confirmatory factor analysis.

Table 6: Fit indices of the models tested at T0

Adjustment indices	M1	M2	M3	M4
CAIC	-57,797	-62,179	-79,134	-73,213
SB χ^2	17,6047	21,4404	31,1471	22,4528
dl	16	18	20	17
SB χ^2 /dl	1.25	1.51	1.61	1.34
CFI	0.844	0.848	0.975	0.865
NNFI	0.881	0.901	0.903	0.903
RMSEA	0.065	0.058	0.085	0.044

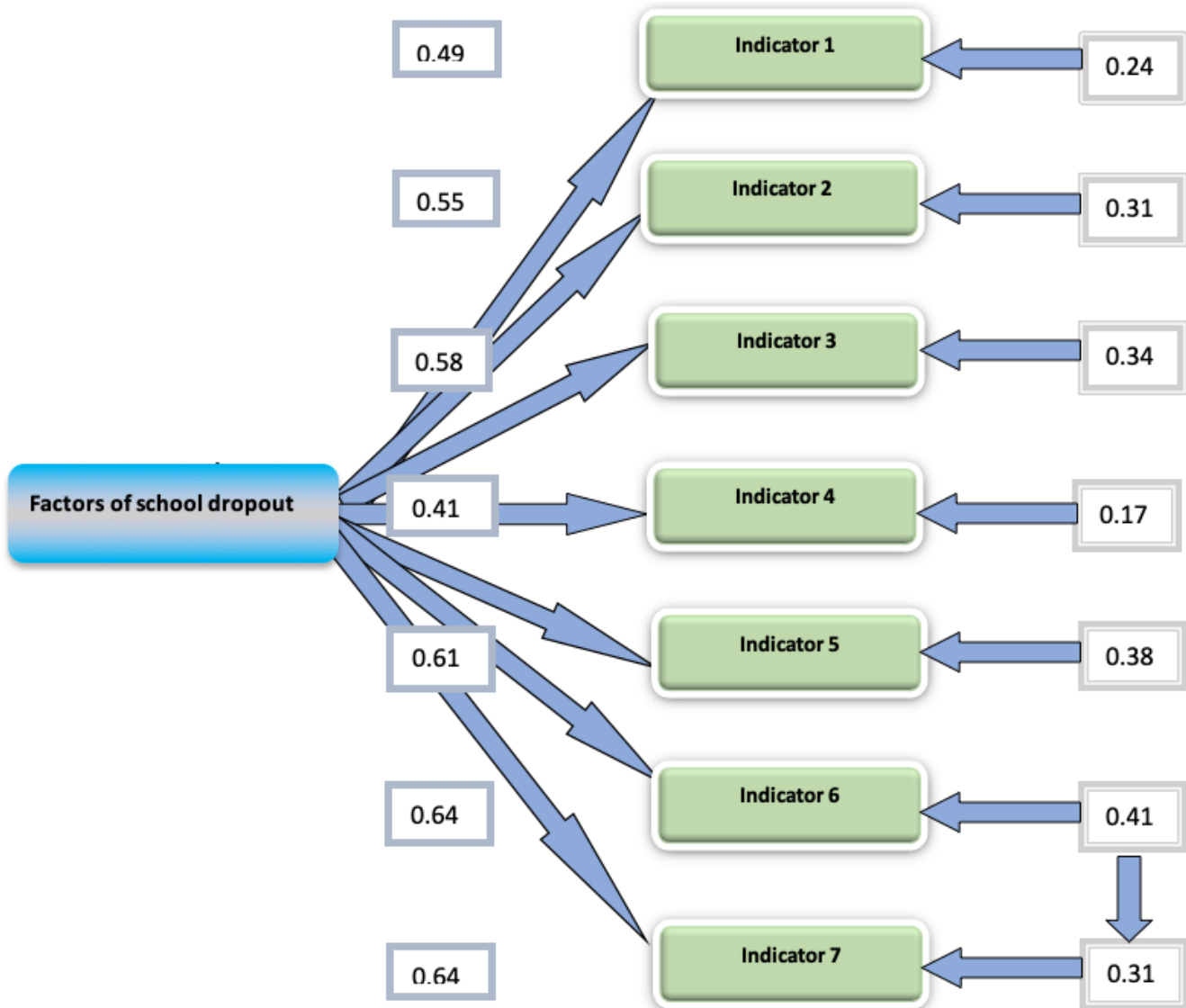


Figure 3: Standardized solution of the confirmatory factor analysis of the model (M4)

Concurrent Validity

Table 7 presents the correlations between the scores obtained by the participants in the two questionnaires at each of the measurement times. The coefficients obtained show that the correlations were higher at each measurement time for the same questionnaire than from one

questionnaire to another. As expected, the correlation coefficients between QSD2 and QSD1 for each of the respective measurement times were all between 0.479 and 0.665 and were significant ($p = 0.01$). This provides proof of the concomitant validity of the QSD2 against another measurement instrument respecting certain proofs of validity concerning the same concept, namely dropping out of school.

Table 7 : QSD2 vs QSD1 correlation coefficients

	QSD2 T0	QSD2 T1	QSD2 T2	QSD2 T3	QSD1 T0	QSD1 T1	QSD1 T2	QSD1 T3
QSD2 T0		0.800	0.619	0.610	0.631	0.565	0.500	0.573
QSD2 T1			0.683	0.673	0.665	0.665	0.499	0.562
QSD2 T2				0.898	0.439	0.441	0.479	0.552
QSD2 T3					0.444	0.467	0.492	0.527
QSD1 T0						0.795	0.624	0.619
QSD1 T1							0.723	0.688
QSD1 T2								0.756
QSD1 T3								

Reproducibility and Response to Changes

Table 7 showing a higher correlation between the QSD2 scores at T0 and T1, compared to T2 or T3, another proof of reproducibility of the results is obtained.

Table 8 presents the average scores obtained at QSD2 and QSD1 at each of the measurement times. It shows that the evolution of the scores was comparable for the two questionnaires. FIG. 3 shows the comparison of the average score with QSD2 at each of the measurement times. ANOVA with repeated measurements of QSD2, by the Mauchly sphericity test, shows a difference in variance over time ($W(5) = 0.433$ $p < 0.05$), intra-subject analyzes (Greenhouse-Geisser) attesting to a significant difference in the average score for each measurement time ($F(2.009) = 115.311$ $p < 0.05$, $\eta^2 = 0.541$). Specifically, the contrast analyzes indicated a significant difference in small amplitude between T0 and T1 ($F(1) = 5.381$ $p < 0.05$, $\eta^2 = 0.052$) and a significant difference in higher amplitude between T1 and T2 ($F(1) = 159.070$ $p < 0.05$, $\eta^2 = 0.619$), as well as between T2 and T3 ($F(1) = 139.223$ $p < 0.05$, $\eta^2 = 0.587$). The very similar average scores obtained at T0 and T1 demonstrate the reproducibility of the questionnaire. The significant moderate increase in scores after the rehearsal session proved to be the response to changes in QSD2. The increase in scores between T2 and T3 is probably due to the maturation of the concepts among the respondents, an adjustment effect being felt after having answered the same questions several times. As the scores were very similar, this mainly demonstrates post-teaching reproducibility.

Table 8 Average QSD2 scores at each measurement time

Measurement time	T0	T1	T2	T3
Scores				
QSD2	0,78	0.76	0.65	0.59

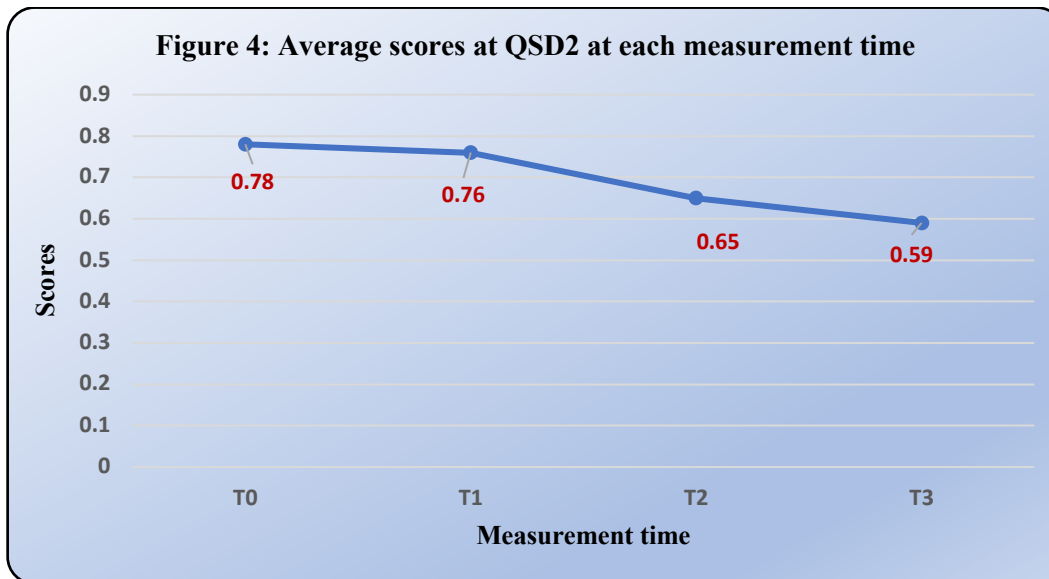


Figure 4: Average QSD2 scores at each measurement time

DISCUSSION

The development and validation process of QSD2 has provided several proofs of validity as proposed by Downing (2003). First, the validity of the content was demonstrated not only by the presence of a specialist in the field as director of research, but also by a literature review and the consultation of existing questionnaires. Verification of the clarity of the items by a group of education experts is further proof of this. The apparent validity, for its part, was established by verification of the items by a sample of the target population. The addition of the "other" choice and the decision to opt for a self-administered questionnaire constitute evidence of the validity of the response process. The pretest stage allowed us to examine the first proofs of validity linked to the internal structure.

Other proof of validity was obtained during the validation phase. Regarding the internal structure, an acceptable level of internal consistency showed that the items in QSD2 were linked to each other. The discrimination index for each item and the Rasch model analysis of items did not identify problematic items. However, we decided that we should keep all the items since they constitute important knowledge that a student must know. As this questionnaire is used to orient the measurement session to the elements to be treated, it is an important issue in relation to the respondent since it is associated with controlling dropout, but from the point of view of the measurement session, this prognostic issue is of lesser importance.

Two types of analysis were used to obtain further proof of validity. The proofs of construct validity are attested by confirmatory factor analyzes which suggested a better fit of the QSD2 data to a model with seven factors. This analysis went in the direction suggested by the internal coherence

coefficient, the causes of school dropout being able to be categorized, as suggested by the theoretical models. In addition, the acceptable correlation coefficients between QSD2 and QSD1 constitute proof of concomitant validity of the QSD. Obtaining moderate correlations between the two measures demonstrated the distinctive nature of the new questionnaire. The correlation being moderate, this shows that the QSD2 is not a simple repetition of the QSD1, but is intended to be a bonus compared to this already existing measurement tool, in particular since it is based on theoretical concepts and that it has accumulated more proof of validity than any other questionnaire.

Comparison of the mean of the scores at each of the measurement times demonstrated the reproducibility and the response to changes in QSD2. The persistence over time of the knowledge acquired as a result of teaching (T2-T3) constitutes proof of the validity of the consequences of using the questionnaire. In fact, the study participants had a higher and lasting level of knowledge about their causes of dropping out.

In order to obtain further evidence of the validity of the consequences of using QSD2, additional measures should have been collected. A measurement time a year later would have verified the retention of information by respondents. Additional proofs of validity could also have been obtained (inter-item correlations, study of generalizability, evidence of convergent / divergent validity, etc.), but their number is already large and would only have confirmed the conclusions already established.

Future research could focus on differentiating the knowledge of Tunisian students based on the socio-demographic data collected. In addition, validation of QSD2 for other populations with different characteristics such as primary and secondary school students could be considered. Finally, cross-cultural validation should be planned to reinforce the generalizable nature of QSD2.

CONCLUSION

Currently, the school offers pupils different experiences that help them define their life plan, in addition to being an essential aspect of social learning and personal development. The purpose of this study was to present a rigorous method for validating knowledge measurement tools using the example of the school dropout questionnaire (QSD). This method can be reproduced for other knowledge measurement instruments in several fields, the steps remaining the same. The various proofs of validity support the proposed interpretation of the results. For the above and with reference to the design and validation of the QSD instrument to determine the causes of pupils dropping out. We conclude the following: 1) The validations performed on the QSD instrument, including internal consistency overall - levels of comprehensibility and ability to identify a model of school dropout - has proven to be effective and highlights the excellent parametric properties for which the questionnaire was designed. 2) By implementing QSD in a population of middle school pupils, it was possible to identify the "model" of pupils' school dropout during their first years of college. The economic, cultural and geographic models having the most impact on the dropout rate in Tunisia.

Finally, the purpose of using QSD in the educational field is to inform education stakeholders of the effect of school dropout on the student in order to increase the effectiveness of their interventions. In doing so, acquiring new sociological analyzes could improve the self-management skills of

dropouts during their schooling. The QSD can be generalized, to a certain extent, since it has been validated with a heterogeneous population concerning age, social space, region, and that it is based on the theoretical conceptions most recent.

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