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IO1

**Literature Review
and
Conceptualization**

AUTH & ISPA

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1. How is the access to Higher Education in the countries of the partners participating in SUnStAR?

The access to Higher Education in the countries of the partners involved in SUnStAR is allowed to those who finished secondary education. However, some differences exist in the way how this access is made. Portugal and Greece have similar access procedures with national exams after secondary education and with “*numerus clausus*” for the number of entrances in each course and Higher Education institution and a centralized system of students’ placement. In both countries the access to Higher Education depends both on the marks that students achieved in the national exams and in secondary education. In Serbia the access also depends on the marks that students obtained during secondary education and on an entrance exam at the university they apply. In Germany, applications are made directly to the universities, but for certain courses the number of available places is determined at national level. The University can decide to have entrance exams or other ways to select the candidates. In Germany, as well as in Portugal and Greece, applicants for some specialized courses must fulfil the specific prerequisites required by the course (e.g. arts, sports science, music, education).

All the partner countries have special access for some groups (e.g., foreign students, people with disabilities, minorities, degree holders); however, here we focus only on the way the great majority of students access higher education.

2. Can students change the field of studies in HE after entrance? If so, how? In the same University or in different Universities?

The situation is different from country to country ranging from the possibility of great mobility in Germany to the almost impossibility to change in Greece. In Germany students can move freely from one field of studies to another as well as change from one University to another. In Serbia students can change of department and/or University since they have accomplished 60 ECTS and do not have less than 60 ECTS to complete for graduation. In the case they change department and/or University they lose the scholarship from the state. In Portugal change is possible but not during the school year of access and depends on the number of places available in the course and institution of higher education for which the student intends to change (this number is a proportion of the total number of places attributed to the University for this field of study in the general access). In this case the application is made directly to the University. In Greece students can change their field of studies only if they repeat

the national exams and restart the access process. However, they can apply to change University once they remain in the same field of studies and fulfil certain financial, family and health requirements.

3. How HE drop-out and transfer is defined and measured in your country?

Country: Germany

Most common definition:

„Students, who were enrolled in a course at a German university, having left the higher education system without a first degree. Students changing their field of study or university as well as students leaving their second studies are not included in this drop-out-rate“ (Heublein, Hutzsch, Schreiber, Sommer, & Besuch, 2010, p. 5; transl. PN).

Measurement challenges: Very difficult access to administrative data or to possibilities follow students' careers, because of data protection laws. Every university collects its own statistics with its own measures and definitions. Thus, retrospective surveys (drop-out) or surveys with students (drop-out intention) are dominating (Larsen, Kornbeck, Kristensen, Larsen, & Sommersel, 2013).

Country: Greece

In Greek Higher Education Institutions (HEI), students are not automatically deleted from the register if they fail to complete their studies within a certain period of study. Thus, the average duration of studies, which is already quite high in Greece, is further increased. However, according to the Ministry the inactive students bear no cost for the system, as they cannot claim any educational benefits. Students have to register for each semester and make a declaration in case they wish to interrupt their studies. The number of the latter is minimal and cannot be considered as a measure of drop-out rate. For this reason, the HE drop out is neither defined nor measured in Greece and may also be the explanation why the requirement to monitor completion rates is not part of external quality assurance procedures (European Commission/EACEA/Eurydice, 2016).

The HEI in Greece measure the number of students within the minimum years of study necessary for the award of a diploma according to the curriculum (N), the active students (N+2) and the inactive students (>N+2). The number of students with more than N+2 years of studies is usually used as an indicator of the drop-out rate, but this is not a precise measure, since many of these students continue their studies and may complete them later.

Country: Portugal

According to Benavente, Campiche, Seabra and Sebastião (1994), drop-out means that a student leaves school without completing the degree attended for other reasons than the transfer. The formal definition refers to the exit from the education system before completion of compulsory schooling (12 years of schooling or 18 years of age), but for the purposes of international comparability it is used as the indicator of ‘early leaver from education and training’ defined by Eurostat, that refers to individuals in the 18-24 age group who have completed at most lower secondary education and are not involved in further education or training. Relating to higher education, the concept of drop-out has assumed several administrative definitions that characterize students as drop-out or risk of drop-out, and can vary according to several “student states”: AI - enrollment in a given school year is annulled by decision of the student or institution, without loss of enrollment; AM - the enrollment is annulled as a result of the student's withdrawal or by decision of the institution; I - a student who, due to lack of enrollment, left the course or course of study, without obtaining a diploma or degree.

With regard to drop-out data collection and statistics, each school year, the Directorate General of Statistics of Education and Science of the Ministry of Science, Technology and Higher Education collects data from the Higher Education Institutions about their students, namely regarding access to higher education and previous and current academic progress. The data collected then becomes available namely through online information portals. Some of these portals aim at informing students’ choices entering higher education. Data includes drop-out rates, previous student minimum admissions scores, and graduate unemployment. Regarding to its measurement, there are two methods of drop-out rate statistics. Method 1 (cross cohort) calculates the proportion among students who graduated in year N and those who entered the system in year N-3. This method is easier to determine (just know the large numbers added to the input and output), assumes steady flows, but is not so good for courses or institutions since it ignores transfers and variations of numerus clausus. Method 2 (true cohort) is an individual follow-up of students which aims to determine how many complete / drop out by the end of X years. Technically, it is much more accurate, but at the same time it is more difficult to calculate once individual information is required on all students over the years. In Portugal, we started to use this second method in 2014.

Country: Serbia

There are no general definitions of drop-out adopted at the national level, in all universities in Serbia. At the University of Belgrade we recently started to track student drop-out and so far have only gathered some preliminary data, which have not been published in University reports. The main data for the previous academic year are presented in the table 1.

Table 1

Distribution of students at University of Belgrade

	frequency	%
Enrolled in the previous year	102334	100
Remained to enroll in the following year	74528	72.83
Graduated	12367	12.08
Students who repeat years and returning students	12050	11.77
Left or enrolled elsewhere (DROP-OUT)	3393	3.32

Overall drop-out at the University of Belgrade is around 3.32%. The drop-out varies at different faculties, from 0.45% at the Faculty of Pharmacy to 8.52 at the Faculty of Chemistry. But so far we have not been able to differentiate between students who left the University and those who just switched to another faculty within the University. Both groups are included in the calculated drop-out percentage.

Table 2

Definition of HE drop-out among SUnStAR partners

Country	Definition
Germany	Students, who were enrolled in a course at a German university, having left the higher education system without a first degree.
Greece	HE drop-out is neither defined nor measured in Greece
Portugal	Drop-out means that a student leaves school without completing the degree attended for other reasons than the transfer.
Serbia	There are no general definitions of drop-out adopted at the national level, in all universities in Serbia.

Table 3

Measurement of HE drop-out among SUnStAR partners

Country	Measurement
Germany	Restrict access to administrative data or to possibilities follow students' careers, because of data protection laws. Every university collects its own statistics with its own measures and definitions and retrospective surveys (drop-out) or surveys with students (drop-out intention) are dominating.
Greece	HE drop-out is not measured in Greece.
Portugal	Two methods are used to measure drop-out. Method 1 (cross cohort) calculates the proportion among students who graduated in year N and those who entered the system in year N-3. Method 2 (true cohort) is an individual follow-up of students which aims to determine how many complete / drop out by the end of X years. Method 2 started to be used from 2014.
Serbia	University of Belgrade begun to track student drop-out and so far have only gathered some preliminary data, which have not been published in University reports.

A first conclusion is that HE drop-out is a broad and multi-faceted concept and that definitions differ widely across SUnStAR project partners, making inter-country comparisons complex. In Germany the concept refers to the exit without having obtained a degree and in Portugal the concept involves several administrative states, yet converges with the German definition, which implies exit without any academic degree. In Greece and Serbia no definition of drop-out is used.

Secondly, it can be concluded that there is also considerable variation between countries as to whether the drop-out measurement instruments used are aligned or not. In Germany, each university uses its own data collection system, and Portugal started using method 2 (true cohort) in (2014. Serbia (University of Belgrade) began collecting data on drop-out, and Greece does not use any system/methodology for collecting data on drop-out.

4. National Reports on drop-out

Country: Germany

The overall drop-out rate in German bachelor programs is 29% (Heublein, Ebert, Hutzsch, Isleib, König, Richter et al., 2017, p. 263). Average drop-out from bachelor degrees occurs after 3.8 semesters (Heublein et al., 2017, p. 46). The drop-out rate in masters' programs is at 15% for

universities and 19% for universities of applied science (Heublein et al., 2017, p. 268-269). The following statements and numbers refer to bachelor programs. Table 4 provides information on drop-out ratios per university type and program group.

Table 4

Drop-out ratios (in %) by university type and program group

University	32
Linguistics / Cultural sciences / Sports	30
Economics / Social sciences / Law	30
Mathematics / Natural sciences	39
Agriculture / Forestry / Nutrition science	28
Engineering science	32
Arts	23
University of applied science	27
Business- / Social sciences / Law	19
Mathematics / Natural sciences	42
Agriculture / Forestry / Nutrition science	31
Health sciences	31
Engineering science	33
Arts	22

Source: Heublein et al., 2017, p. 264

Country: Greece

Table 5 presents the number of students within the normal period of study (N) and those beyond N years from 2003 to 2016 according to the [Ministry of Education, Research and Religious Affairs](#) and the [Hellenic Statistical Authority](#).

Table 5

Number of university students in Greece within normal period of study (N) and with more than normal years of study (>N)

Ac. Year	N	>N
2003-2004	169.188	106.925
2004-2005	168.660	117.694
2005-2006	170.629	139.493
2006-2007	166.960	155.595
2007-2008	165.463	161.591
2008-2009	163.718	173.161
2009-2010	165.443	176.393
2010-2011	168.478	178.826
2011-2012	168.804	183.986
2012-2013	168.637	182.034
2013-2014	174.039	193.207
2014-2015	180.480	213.098
2015-2016	190.962	220.115

According to OECD [Education Policy Advice for Greece](#) (2011), overall completion rates appear to have improved, but in many institutions, drop-out rates are high, completion rates are low, and the average duration of student studies is substantially longer than the minimum required.

Figure 1

Number of university students in Greece within the normal period of study (N) and with more than normal years of study (>N)

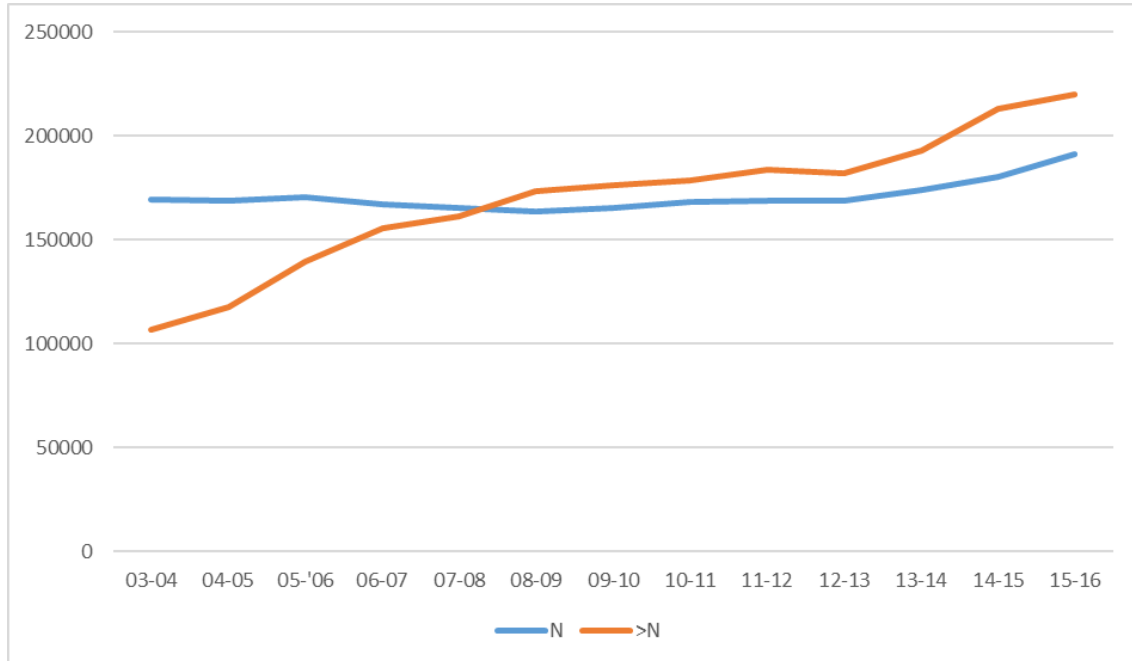
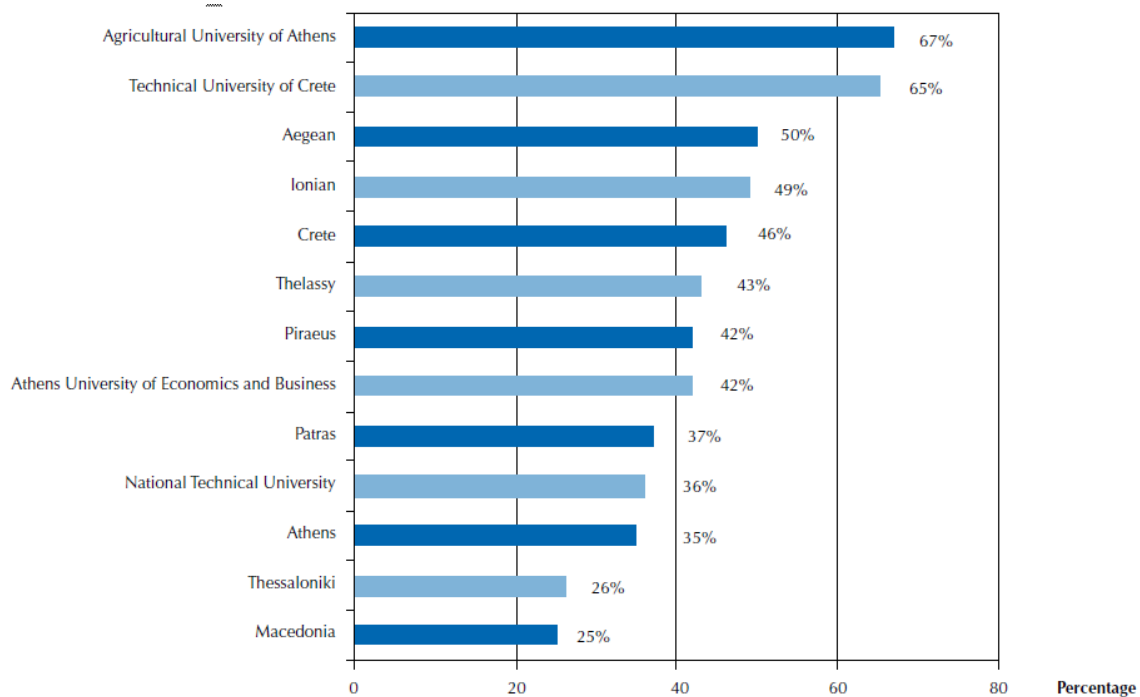


Figure 2

Estimated percentage of first-degree students still enrolled after N+2 years from selected universities



Source: Ministry of Education, Research and Religious Affairs

Country: Portugal

The proportion of students who enter tertiary education and graduate is 21% (OECD, 2017), and the completion rate is 67% (OECD, 2013). Data reported to the General Directorate of Education and Science Statistics by higher education institutions, through the RAIDES survey (Registration of Enrolled Students and Graduates of Higher Education - information available in the web Portal InfoCursos @ <http://infocursos.pt>) in the academic year 2015/16 show the following scenario: in all subsystems of education, at least 1 of ten students is not found in Higher Education in the next school year, and the overall drop-out rate at the end of the 1st year is around 11% (see Figure 6). When comparing the data of the various subsystems (private, public, polytechnic and university) of Higher Education related to the period under analysis, there are differences between University (U) and Polytechnic (P), with drop-out rates after the 1st year (Figure 1) of 12% among Polytechnic institutions and 10% for the University, with a difference of 8% between public (7.3%) and private (15.3%). The comparative analysis between Bachelor and Integrated Masters shows that among bachelor courses the drop-out rate in the 1st year is higher (11%) than in the courses that offer an Integrated Master (5%). It is also reported that this rate reaches a much lower value in integrated master courses with 3.4% in Public Universities and 12% in Private Universities (Figure 5).

Figure 3

HE education drop-out rate at the 1st year in Portugal: Polytechnic vs University

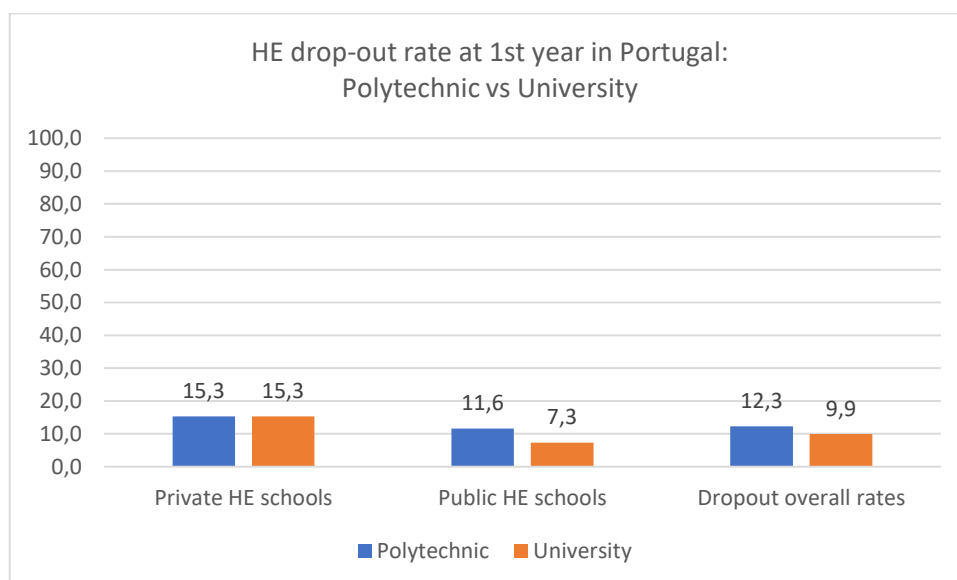


Figure 4

HE education drop-out rate at the 1st year in Portugal: University level (Bachelor vs Integrated Master)

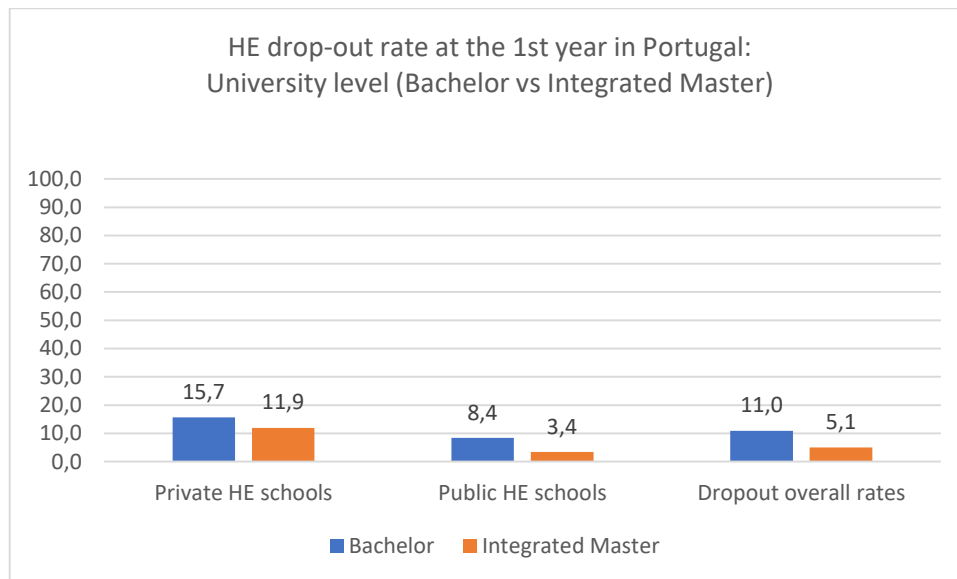
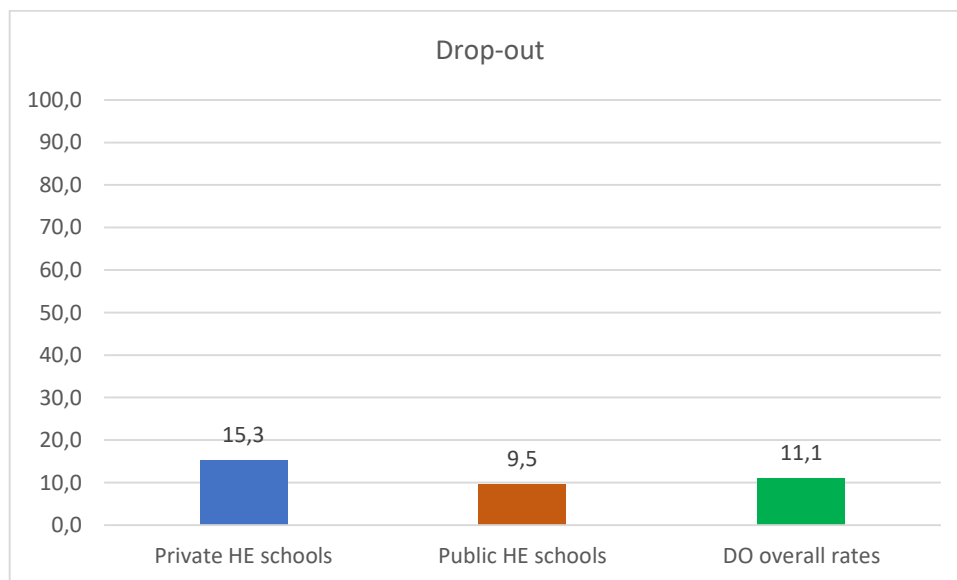


Figure 5

HE education drop-out rate in Portugal: public vs private schools



Country: Serbia

In Serbia there are no National reports on drop-out or drop-out statistics for higher education. We obtained the following data from The Statistical Office of the Republic of Serbia (<http://www.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=126>). In the 2016/17 school year 15,056 students enrolled for the first time in the first year of academic studies at the University of

Belgrade. In the 2015/16 school year 13,134 students in the Belgrade region graduated from all universities in their primary academic studies. At Belgrade university 14,364 students graduated at all levels of studies (primary, master and doctoral) in 2015/2016. The number of students at Belgrade University at all levels of studies in 2015/16 school year was 89,891.

Table 6

Reports on HE drop-out ratios among SUnStAR partners

Country	Drop-out reports
Germany	The overall drop-out rate in German bachelor programs is at 29 Percent. Average drop-out from bachelor degrees occurs after 3.8 semesters. The drop-out rate in masters' programs is at 15 Percent for universities and 19 Percent for universities of applied science.
Greece	According to OECD Education Policy Advice for Greece (2011), overall completion rates appear to have improved but in many institutions drop-out rates are high, completion rates are low and the average duration of studies is substantially longer than the minimum required.
Portugal	At least 1 of ten students is not found in Higher Education in the next school year and the overall drop-out rate at the end of the 1st year is around 11%. The drop-out rate in masters' programs is lower (5%) than bachelors' (11%), and higher among HE private schools (15.3% vs 9.5% in public). The proportion of students (OECD, 2017) who enter tertiary education and graduate is 21% (OECD, 2017) and the completion rate is 67% (OECD, 2013).
Serbia	n/a

From the comparative analysis between SUnStAR countries (Germany and Portugal), we can conclude that the drop-out rate varies between 29% and 33%, and drop-out ratios are lower in the 1st year and increase in subsequent school years (11% in Portugal at the 1st year). It should be noted that there are differences between the courses that offer integrated study cycles and bachelor's, which may lead to the conclusion that masters' courses retain a greater number of students. Although there are no official statistics, according to the OECD (2011), the drop-out rate is high in Greece and there is no data for Serbia.

5. Factors linked to drop-out

University students' drop-out has been a widely studied phenomenon, and numerous factors have been associated with it. However, the need for research focused in the context within which drop-out occurs is still high in an attempt to develop effective preventive strategies within particular contexts (Bernardo, Esteban, Fernández, Cervero, Tuero, & Solano, 2016). In the SUnStAR framework, there has been found variability among the partner countries in terms of national reports describing the current situation regarding dropping out from university. Moreover, there are problems with the definition of the phenomenon mainly due to the different national educational cultures and policies (Troelsen & Laursen, 2014). Even in the case of countries like Greece and Serbia, where dropping out 'does not officially exist' or cannot officially be measured for different reasons (see Q1 above), there are students who prolong their studies for many years being at high risk to drop-out or students who have already dropped out from their studies although they appear in the Universities' registries. The above issues indicate the necessity for further research in order specific preventive measures to be designed and applied, as well as special services to be offered to university students who are at risk for dropping out. Towards this aim, the main emphasis should be on the factors associated to drop-out from University.

Up to now the literature has suggested the necessity of a broad framework (De Witte, Cabus, Thyssen, Groot, & Maassenvandenbrink, 2013) of factors associated with dropping out from University. These factors represent a wide range of individual differences and can be categorized into three main categories: (i) individual, (ii) social-demographic, and (iii) institutional-academic factors (e.g., Bernardo et al., 2016; Heublein, 2014; Larsen, Sommersel, & Larsen, 2013; Troelsen & Laursen, 2014). Moreover, the above factors extent along a continuum including both pre-university entry and after-university entry (e.g., Heublein, 2010, 2014; Tinto, 1993, 1998; Larsen et al., 2013). Based on the available data, all SUnStAR partner countries have identified factors from all three above categories as well as from both pre- and after-university entry. A description of them including evidence from the international literature and from the partner countries follows below.

A. Individual Factors

Individual or personal factors include a number of academic/cognitive, personality and motivational variables. A short description of the above three groups of variables follows:

(i) *Academic/Cognitive factors*. Individual academic and/or cognitive factors include pre-tertiary academic achievement (Heublein et al., 2017; Müller & Schneider, 2013; Voelkle & Sander, 2008), GPA during university, learning styles or approaches to learning, self-regulatory strategies (Respondek, Seufert, Stupnisky, & Nett, 2017; Richardson, Abraham, & Bond, 2012), intelligence and complex problem solving skills (Stadler, Becker, Greiff, & Spinath, 2015a; Stadler, Becker, Schult, Niepel, Spinath,

Sparfeldt, & Greiff, 2017). Student related academic factors such as achievement trajectories including pre-university secondary school achievement as well as after-university entry grades (GPA) have been identified as important predictors of drop-out from the university (Bernardo et al., 2016; Richardson et al., 2012; Robins et al., 2004; Wolter, Diem, & Messer, 2014). Specifically, prior student achievement in secondary school, as well as their examinations' records, especially those related with the entrance to the university prerequisites as these are defined by the national educational systems, have been acknowledged by all partner countries. This is an extremely important factor not only per se but, in some cases it represents the determining factor of the university faculty/school a student succeeds at. In other words, a student may succeed to a university faculty/school which is not among her/his first choices. This has important consequences for students' being satisfied with their studies, especially in the first year, and their decision to continue their studies, change field of studies or quit university. For example, in Greece, Portugal and Serbia there are national entrance exams which are highly competitive in nature, especially for faculties/schools with high reputations (e.g., faculties of medicine and law). In Germany, prior academic achievement is even more important due to the early tracking system between the general and vocational education (Grade 5) which offers opportunities for university studies only to the academic track (Gymnasium) via the final examination (Abitur). Opportunities for higher education are offered to students from the other tracks in some federal states, but still their probabilities to succeed are very low (Müller & Schneider, 2013). Thus, pre-university student academic achievement seems to play an important role very early in students' school life.

Another set of academic factors represents so-called academic-related skills including approaches to learning, self-regulated learning strategies and study skills, which have been associated with optimal learning and college retention (Bernardo et al., 2026; Richardson et al., 2012; Robins et al., 2004). Approaches to learning represent broader conceptualizations of how students prefer or tend to deal with an academic task and learn, including both personal and situational characteristics in a way that the person-situation interaction is crucial for performing successfully the task in hand (Biggs, 1993; López, Cerveró, Rodríguez, Félix, & Esteban, 2012). Deep and surface approaches have been mainly distinguished (e.g., Biggs, Kember, & Leung, 2001; Kyndt, Dochy, Struyven, & Cascallar, 2011; Lopez et al., 2012), with the strategic approach, which includes both deep and surface approach characteristics, to be also acknowledged as a third type by some researchers (e.g., Entwistle & McCune, 2004). The deep approach, that is analysis, synthesis and critical evaluation of information, and the strategic approach have been positively associated with adaptive academic outcomes including GPA, whereas the surface approach, that is shallow cognitive strategies such as passive memorization (rehearsal), have been negatively related to GPA (Richardson et al., 2012).

Self-regulation learning skills include a broad array of cognitive, metacognitive and motivational strategies such as planning, monitoring, regulation, evaluation, study/time management, effort regulation, study-leisure conflict and help seeking indicative of the active, conscious and purposeful engagement of the learner her/himself in the learning process as well as her/his personal responsibility of her/his own learning. The role of self-regulation in learning and academic outcomes has been internationally acknowledged during the last decades and high-level self-regulatory strategies have been associated with better academic outcomes including GPA and persistence to study (e.g., Boekaerts & Corno, 2005; Robins et al., 2004. Schunck & Greene, 2018; Zimmerman & Schunk, 2011).

Further, meta-analyses have indicated intelligence measures as a consistent strong predictor of academic achievement in tertiary education and university success (Richardson et al., 2012; Stadler et al., 2017). Albeit significantly correlated with intelligence (Stadler, Becker, Gödker, Leutner, & Greiff, 2015b), complex problem-solving skills such as dealing with complex, changing and demanding environments (e.g., universities) and facing new challenges have been found to predict university success over and above intelligence (Stadler et al., 2017).

Based on the national literature reviews of each partner country, pure cognitive factors such as intelligence and complex problem solving skills as identified in the international literature and described above, have not been studied as factors potentially associated with university drop-out and/or university success with the exception of a Serbian study which showed that the interaction of general intellectual ability with personality factors predicted psychology students' academic success (Hanak, 1999). However, academic-related skills such as self-regulation, learning and study strategies and approaches to learning have been identified as significant predictors of university success and drop-out in Germany (Heublein et al., 2017; Schiefele, Streblov, & Brinkmann, 2007; Trapmann, 2007; Van Bragt, Bakx, Bergen, & Croon, 2011; Wosnitza, 2007), Serbia (Lazarević & Trebješanić, 2013; Tubić, 2003) and Portugal (Belo & Oliveira, 2015; Ferreira & Fernandes, 2015). In Greece, despite the limited evidence on student non-completion, a recent study of students who had prolonged their studies for more than N+2 years identified the mismatch between students' study habits for secondary education as well as for the high-stake admission exams on the one hand, with the study requirements for the university courses on the other. This mismatch was indicative of a lack of the appropriate academic skills on the part of students who are at risk to quit their studies (Panagiotopoulos, 2015). In addition to the above factors, class attendance and absenteeism play a significant role in Greece and Portugal, whereas grade retention has been referred in Portugal.

(ii) *Personality factors*. A number of personality factors ranging from the Big-Five personality traits to emotional intelligence and resilience have been associated to university drop-out. Within the five-

factor model (Costa & McRae, 1992), conscientiousness has been consistently found as the strongest predictor of study continuance and academic performance (GPA). Highly conscientious university students better organize their studies, persist more in their studies, have higher performance and in turn are less likely to drop-out (e.g., Poropat, 2009; Richardson, 2012; Van Bragt et al., 2011; Vedel, 2014). Moreover, a special facet of conscientiousness, namely procrastination (Steel, 2007), is considered as a particularly risky behaviour for university students with students high in procrastination to be more likely to achieve less and not to persist with the demands posed by tertiary-level studies (Poropat, 2009; Richardson et al., 2012).

Beyond the Big-Five model, emotional intelligence as a set of abilities resulting in better emotion recognition, understanding and regulation (Mayer, Salovey, & Caruso, 2000) has been associated with university students' learning and performance, as well as with their ability to face academic challenges successfully and to persist in their studies (e.g., Richardson et al., 2012). On the contrary, anxiety and depression have been found to affect academic performance and adaptation to university life (Richardson et al., 2012). Further, academic hardiness with its three dimensions (commitment, control, and challenge) (Kobasa, 1979; Maddi & Kobasa, 1984) has been associated with student resilience to cope with aversive and stressful situations in the university (e.g., exams, challenging assignments or stressful events) and, consequently, to limit drop-out likelihood (Hystad, Eid, Laberg, Johnsen, & Bartone, 2009; Maddi, 2005, 2006).

Personality factors have been the least examined factors as potential predictors of university drop-out or intention to drop-out in the partner countries. In line with the international literature, evidence about personality factors in Germany indicated conscientiousness as the strongest predictor of university grades, as well as emotional stability as a significant predictor of academic satisfaction (Trapmann, Hell, Hirn, & Schuler, 2007). Few Greek studies have focused on academic hardiness indicating its contribution in building resilience and moderating university stressors such as academic pressure, fear of failure, financial difficulties, competition, etc. (Kamtsios & Karagiannopoulou, 2013, 2015; Karagiannopoulou, & Kamtsios, 2016). In regard to mental health, a number of studies in Serbia have shown that anxiety and depression were associated with emotionally focused coping strategies and, in turn, with lower academic achievement and self-satisfaction. This was particularly the case for medical students (Backović & Jevtić, 2012; Genc, 2017; Knežević, Jović, Rančić, & Ignjatović-Ristic, 2012; Latas, Pantić, & Obradović, 2010; Mohorić, 2008).

(iii) *Motivational factors*. In general and independently of particular motivational theories, lack of motivation has been identified among the most important factors for drop-out or intention to drop-out and high motivation for university commitment, retention and success, respectively (Heublein, 2014;

Richardson et al., 2012; Robins et al., 2004. Tinto, 1993; Van Bragt et al., 2011). They usually include a great number of motivational constructs such as intrinsic and extrinsic motivation, achievement goal orientations, attributions, competence and self-efficacy beliefs. Specifically, intrinsically motivated and mastery oriented students, students with high competence beliefs, high self-efficacy beliefs for their domain of study and expectancies to succeed, as well as students with an adaptive causal attribution profile (internal locus of control, unstable and malleable cause of success and failure) and who value academic learning more are less likely to fail in their studies or to quit university (e.g., Ruthig, Perry, Hladkyj, Pekrun, Clifton, & Chipperfield, 2005; Richardson et al., 2012; Robins et al., 2004; Troelsen, 2014; Van Bragt et al., 2011). For example, competence beliefs and value for STEM choices at the university predicted study continuance, whereas perceived cost, such as the required effort for success in a STEM major and lost opportunities due to high demands, were associated with students' intentions to leave their STEM choice (Perez, Cromley, & Kaplan, 2014).

In addition to the above motivational factors, academic emotions such as enjoyment, boredom and anxiety have been recently studied in the field (e.g., Pekrun, 2006; Pekrun & Stephens, 2010). A variety of academic emotions both positive and negative may be experienced by university students which are usually related to personal achievement or university factors (e.g., academic demands). As expected, students who experience negative academic emotions and, especially high anxiety, are more likely to intend to drop-out or to withdraw from a course and are reported by students who have dropped out of their studies (Respondek et al., 2017; Ruthig et al., 2008).

In regard to the partner countries, it should be noted that motivational factors have not been extensively examined with the exception of Germany where numerous studies have been conducted and most of them primarily focused on intrinsic and extrinsic motivation (see Heublein, 2014; Heublein et al., 2017). Specifically, intrinsic and extrinsic motivation were found as negative and positive significant predictors of drop-out, respectively (e.g., Blüthmann, Thiel & Wolfram, 2011; Brandstätter, Grillich & Farthofer, 2006; Fellenberg & Hannover, 2006; Heublein et al., 2017; Schiefele et al., 2007). For example, within self-determination theory (Deci & Ryan, 2000), it was found that even a small change in intrinsic motivation was related with the intention to drop-out (Rump, Esdar, & Wild, 2017). Other motivational factors in the German studies include students' weak commitment to their studies and low identification with the student role (e.g., Georg, 2009; Heublein, 2014). Among the limited evidence in the other partner countries, the partners from Serbia identified a Croatian study indicating the significance of student intrinsic motivation behind the choice of a field of studies for later study satisfaction (Reić, Ercegovac, & Jukić, 2008). For Greece and Portugal, where the highly competitive

national admission exams do not let all students get enrolled to their first choice of studies, low intrinsic motivation and weak commitment to studies are expected (CRUP, 2013; Panagiotopoulos, 2015).

B. Social-demographic factors

Social-demographic factors include personal characteristics such as age, gender, and minority background, as well as socio-economic background such as parental educational level, occupational status and family income. All the above factors have been extensively examined in the area of university academic performance and drop-out. Despite the studies showing no clear differences between female and male students (e.g., Troelsen & Laursen, 2014) or between younger and older students in terms of their entry year to university (Farsides & Woodfield, 2007), male students and older students compared to female and younger students are considered as being at higher risk for drop-out (e.g., Larsen et al., 2013; Van Bragt et al., 2011; Wolter et al., 2014; Zotti, 2015). Lower socioeconomic background (as related to parent education and profession) has been positively associated with drop-out, although higher socio-economic background does not assure drop-out prevention (Ghignoni, 2017; Müller & Schneider, 2013). Specifically, the lower the parental education, the higher the risk for drop-out is (Troelsen & Laursen, 2014). Moreover, family income and student financial support have been constantly linked with drop-out (Argentin & Triventi, 2010; Bernardo et al., 2016; Heublein, 2014), although financial problems may not be the main cause for dropping out (Georg, 2009). Finally, students having an ethnic minority or migrant background are at higher risk for drop-out (Troelsen & Laursen, 2014). On the contrary, younger students and especially those who start university immediately after secondary school, female students, students from higher socioeconomic background with well-educated parents who offer financial support to them, and students with no minority origins are more likely to have higher academic performance (Richardson et al., 2012; Robins et al., 2004).

All the above factors identified in the international literature have been also identified in the partner countries. Specifically, German studies confirm the important role of the above socio-demographic factors such as gender, socio-economic background, parental non-academic background, living conditions (e.g., family income, early parenthood) (Heublein et al., 2017; Pohlenz, Tinsner, & Seyfried, 2007), and migration background (Ebert & Heublein, 2017; Heublein et al., 2017; Rech, 2012). An interesting finding in Germany has to do with the socio-economic background and the different educational tracks leading to Universities or to Universities of Applied Sciences. In particular, the effect of socio-economic background takes place earlier, when students enter higher education institutions and not during the studies. Although students from lower socio-economic background are more likely to drop-out from Universities, the socio-economic status does not have a significant effect on drop-out at Universities of Applied Sciences (Hillmert & Jacob, 2003; Müller & Schneider, 2013). Occupation

during studies has also been acknowledged for German students coming from lower socio-economic background as a positive predictor of drop-out (Heublein, 2014).

The evidence from Serbia and neighbour countries indicates that students from rural areas, with lower economic status, who finished secondary school other than grammar and whose parents do not have higher education are more likely to have insufficient financial aid (Ilišin, 2009; Kovačević, & Pavlović, 2016; Pavić & Vukelić, 2009), lower achievement, and be at higher risk for prolonged studies and drop-out (Knežević, Jović, Rančić & Ignjatović-Ristic, 2012; Matković, Tomić & Vehovec, 2010; Milojević, Janković & Cvetković, 2015; Zrakić & Juračak, 2012). Regarding gender, the results in Serbia and the region are mixed (Latković, Milekić, Stojiljković, Zebić, & Marić, 2009) with female students' academic performance to be higher than male students in few studies (e.g., Zrakić & Juračak, 2012), and vice versa in some other studies (e.g., Milojević et al., 2015).

Socio-economic and family factors as predictors of university drop-out have been indicated in Portugal and Greece, as well. Especially during the years of the financial crisis, the reduced number of student scholarships in Portugal in combination with family financial difficulties, other family problems or the distance from school to home increased the drop-out rate of Portuguese students, as well as their vulnerability regarding university success (Fernandes & Lopes, 2017; Ferreira, 2017; Silva, 2015). In Greece, where the financial recession has been tremendous, the number of students with prolonged studies has increased (Panagiotopoulos, 2015). They may be still registered at the university due to the national legislation, but they become alienated from the university and are at high risk to never complete their studies. The mean Greek family has difficulties supporting financially their children to study, especially if the children have succeeded to a university located in another city. A large number of students nowadays combine studies with work (usually temporary work at coffee places, bars and restaurants where they have to work late in the evening or night). These students are more likely to come from the low socio-economic background, with parents of low educational level, with a minority background (e.g., the Greek Muslim community), poor command of the Greek language or with special needs (AUTH Observatory, 2016). It should be also noted that in both Portugal and Greece, the effects of the economic crisis on unemployment, and, especially, on youth unemployment, have led young people to a pessimistic attitude about employability in the national labour market, which affects their commitment to their university studies and may potentially lead them to drop-out of higher education (Ferreira, 2017; Panagiotopoulos, 2015).

C. Institutional - Academic factors

Institutional - academic factors refer to all institutional characteristics that constitute barriers to good academic outcomes and study completion. Structural characteristics such as flexibility to change

field of studies or number of exam periods, curriculum and teaching quality (e.g., not interesting, old or very frequently changing programme of study, teacher-oriented methods and non-effective instructional strategies, poor teaching infrastructure and resources, lack of requirements for students' active engagement in the learning process, lack of training opportunities, absence of teacher and peer mentoring, bad students - staff ratio, etc.), extremely high academic demands (e.g., amount of material, type of exams), and poor administrative support for new and complex environments like universities are few examples of important institutional barriers for student success (e.g., Heublein, 2014; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2009; European Commission, 2015; Wolter et al., 2014). The above factors in combination with students' individual vulnerable educational paths (e.g., academic vs. vocational path, insufficient educational qualifications for a programme, learning gaps etc.) increase student perceived difficulties to get along with their studies and the drop-out probabilities (Heublein et al., 2014; Müller & Schneider, 2013). It should be also noted that students may also experience a mismatch between their educational and social expectations (e.g., difficulty level, scientific interest, leisure time) and university reality (Heublein et al., 2017; Maloshonok & Terentev, 2017).

Further, the lack of services providing students with psychological and educational support to overcome difficulties, as well as the lack of social integration activities which could facilitate student social and emotional adaptation are also significant factors for study non-completion and dropping out (Bernardo et al., 2016; Eckles & Stradley, 2012; Larsen et al., 2013; Troelsen et al., 2014; Robbins et al., 2004; Vossensteyn, 2015).

All four SUnStAR partners have acknowledged the above institutional factors as potential predictors of dropping out and have highlighted the importance of support provided by the higher educational institutions in their countries. Studies in Germany and other international contexts have indicated the importance of organizational structure, transparency and teaching quality (Braxton et al., 2014; Burger & Groß, 2016; Georg, 2009; Hovdhaugen & Aamodt, 2009), social integration activities (Eckles & Stradley, 2012; Heublein et al., 2017), and the necessity for counselling services as well as for teachers to support students (Blüthmann, Lepa, & Thiel, 2008; Herfter, Grüneberg & Knopf, 2015; Heublein et al., 2017; Pohlenz & Tinsner, 2004). The existence of alternatives to academic studies such as vocational paths, may increase drop-out rates from university (Heublein et al., 2017) but enables students to remain in post-secondary educational training.

Similarly, the Greek and the Portuguese studies have pointed out the rigidity of the national admission system (e.g., success to a non-desirable programme of studies, lack of possibility to change field of studies) and the prior educational profile of the student in mismatch with the academic demands of the university (CRUP, 2013; Panagiotopoulos, 2015). In addition, a mismatch between

student expectations, studies and the professional field have been reported in Portuguese studies (CRUP, 2013), whereas factors related to enrolment selection have been identified in the Serbian/Croatian studies, as well (Rodić, 2001). The quality of teaching and of the programme of studies as sources of limited student satisfaction, as well as the lack or limited provision of specialized support to students at risk for drop-out have been referred by the Greek, the Portuguese and the Serbian/Croatian studies (Cerdeira, 2005; Costa & Lopes, 2008; Kalantzi-Azizi, 1996; Pinto, Faria, Pinto, & Taveira, 2016; Reić Ercegovac & Jukić, 2008). Further, Portugal and Greece, obviously due to the financial recession, have stressed the lack of grants provision to students who face financial difficulties as an extra potential factor for dropping out (Ferreira, 2017; Panagiotopoulos, 2015) and Serbia pointed out government insufficient support to higher education institutions.

Final remarks on factors related to university student drop-out

The above analysis has made clear the complexity of the phenomenon under examination. University student drop-out has been empirically linked with a large number of factors including individual (academic/cognitive, personality and motivational), socio-demographic and institutional-academic factors. However, we believe that the great majority of the above factors identified as potential predictors of university student drop-out constitute a broader umbrella of factors related with student adaptation to university. The transition to university poses various challenges to young people ranging from academic demands to socialization processes. Students' adjustment to academic and social life at the university enhances student persistence, commitment and study completion, whereas it reduces drop-out rates or intention to drop-out (e.g., Respondek et al., 2017; Robins et al., 2004). In the following section, successful adaptation to higher education will be discussed in regard to the variety of factors which have been identified as significant correlates. To avoid repeating the literature of the current section the following discussion will be mainly focused on the SUnStAR partner countries.

6. Factors linked to successful adaptation to higher education: Literature review and the case of the SUnStAR countries

The transition to university or college represents the transition to adulthood (Montgomery & Côté, 2003) and university life coincides with a distinct developmental phase in young people's life, namely emerging adulthood (Arnett, 2000, 2004). During this period emerging adults experience developmental and contextual changes and need to cope with academic, social and emotional challenges to adjust to the new context. Successful adaptation to university requires a variety of student

competencies and skills and, unfortunately, there are students who experience difficulties in this process and are at high risk for developing serious adjustment difficulties including psychopathology (Dyson & Renk, 2006).

As has been shown in the literature review above, students' pre-university academic profile as well as their academic profile while studying at the university (achievement in secondary education, performance in admission exams, knowledge, skills, learning patterns, GPA), personality traits (conscientiousness, procrastination, emotional intelligence and hardiness), motivational beliefs (competence and efficacy beliefs, orientations towards mastery and personal development, perceived control) academic emotions, commitment to studies and personal meaningful goals are important factors for a university student, especially the first year student, to go well with her/his studies, pursue her/his academic goals and limit the probabilities for dropping out.

However, all the above factors are associated with adjustment to the university environment (e.g., Bernardo et al, 2016; Heublein, 2014; Respondek et al., 2017; Richardson et al., 2012; Robins et al., 2004; Van Bragt et al., 2011). This adaptation process lies between the person and the environment, as the context within the person lives provides affordances and/or sets barriers to her/his behavior and performance. Thus, contextual factors related to family and school/university, as well as to broader systems such as the community or the educational system of one's country, play also an important role in adaptation to university life. For example, parental educational level, as it is related to the degree of socialization to higher education and to the value of learning and pursuing academic goals, or family income, as it is related to student financial support so that the student can continue her/his studies, have been consistently associated with academic and socialization outcomes, persistence, and study completion (e.g., Bernardo et al., 2016; Heublein, 2014; Larsen et al., 2013; Müller & Schneider, 2013; Troelsen & Laursen, 2014).

The educational system, including admission to university procedures and structural characteristics of higher education (e.g., flexibility in changing field of studies), significantly influences student adaptation to University. For example, students who have not succeeded in a faculty/school/department among their first choices, or students who are not pleased with their initial choice and wish to change field but are not allowed to by law, are more likely to feel less satisfied with their studies, perform less well and adjust themselves less successfully to university life (e.g., Heublein, 2014; Larsen et al., 2013; Müller & Schneider, 2013; Thomas & Hovdhaugen, 2014; Troelsen & Laursen, 2014; Wolter et al., 2014).

Finally, the university itself sets a number of challenges to students, especially in the beginning of the university life but also during the following years. High academic demands, new teaching methods,

new study habits, bigger and less personalized student audiences, new organizational structures and administrative procedures in combination with socialization demands like meeting new friends, communicating with professors and living alone are some examples of university challenges that have been linked to student adaptation to university. In addition, other institutional characteristics such as faculty members-students ratio and the resources provided to support students' academic tasks, socialization needs, and psychological or other difficulties are factors which have been identified as significant to student adaptation (e.g., Heublein, 2014; Thomas, 2002; Thomas & Hovdhaugen, 2014; Tinto, 1993; Wolter et al., 2014).

Within the above framework, many of the above variables have been acknowledged by the national studies from the SUnStAR countries. In particular, the Greek studies about student adaptation to university (which are more compared to the limited studies about dropping out) have focused mainly on (i) the role of procrastination, hardiness, perceived control and optimism, (ii) family cohesion and perceived social support from friends, (iii) socio-demographic factors and, (iv) institutional characteristics. For Greek university students, adaptation to university (measured as psychological well-being, positive affect, and life satisfaction) and dysfunctional health behaviors (e.g., drinking, absence of physical exercise) have been associated with procrastination, negatively and positively respectively (Argyropoulou, Sofianopoulou, & Kalantzi-Azizi, 2016). Further, academic hardiness, conceptualized as a combination of commitment, control, and challenge (Maddi, Khoshaba, Jensen, Carter, Lu, & Harvey, 2002) was found to moderate university stressors such as academic pressure, fear of failure, grades, lack of spare time, financial difficulties, competition, etc. (Kamtsios & Karagiannopoulou, 2013, 2015; Karagiannopoulou, & Kamtsios, 2016). Similarly, perceived control and optimism were found as significant predictors of student academic, social and emotional adaptation to university (Gantona, 2007). As far as the contextual factors are concerned, perceived family cohesion and perceived social support by friends significantly predicted adaptation to university via optimism and control (Gantona, 2007; Gantona & Stogiannidou, 2009). Father education and gender were also associated with adaptation. Students having fathers holding a university degree and female students were better academically and socially adapted, whereas male students were better emotionally adapted (Gantona, 2007). For institutional factors, the limited evidence indicates that structural characteristics (e.g., university size) are not related to student adaptation, but functional characteristics like the perceived quality of the relationships within the university community (e.g., with friends, professors and staff) and support by the members of the community are more important for student adaptation (Gantona, 2007). Further institutional barriers that negatively affect student adaptation and study satisfaction are related to the national admission system which is based on very competitive exams, especially for high

prestige fields (e.g., medicine, law, engineering), as well as to the absence of any kind of flexibility regarding potential change in the field of studies. The only way for a student to change field is again via the national admission exams. These barriers have been known for many years by national educational policy decision makers and several attempts to change the educational system have been unsuccessfully initiated.

Likewise, in Germany, the number of factors associated with dropping out, and mentioned earlier in this report about drop-out, are also associated with student adaptation but with different weights. For example, pre-university factors like school achievement, main courses in school, and type of school are more influential on achievement and academic adaptation to university than on drop-out intentions and/or decisions (Blüthmann et al., 2008; Heublein et al., 2017; Müller & Schneider, 2012; Wosnitza, 2007). The same is true for academic/cognitive characteristics, personality factors with a particular emphasis on conscientiousness (Trapmann et al., 2007) and motivational factors like perceived control and academic emotions (Respondek et al., 2017). Further, the psychological learning environment of the university, that is, the subjective perceptions of social, formal, and pragmatic aspects of the university have been associated with academic learning and academic adaptation (Wosnitza, 2007).

In a similar vein, the studies in Serbia and Croatia also indicate the majority of the drop-out factors mentioned above as being negative correlates of positive adaptation and academic performance. Specifically, academic success as an index of academic adaptation was significantly correlated with deep learning approaches and the sensory learning style, whereas successful study habits were predicted by general intellectual ability and motivation. Student achievement in secondary education was again significantly associated with later academic results of education students (Rodić, 2001). Instructional practices and teaching quality, in general, as well as studying conditions were associated with student satisfaction (Jevremov, Lungulov, & Dinić, 2016; Reić Ercegovac, & Jukić, 2008) and, in some cases, with student stress (Randelović, 2010). Doing sports in one's spare time was also associated with positive adaptation to higher education. Finally, among the socio-demographic variables, higher economic status, living in urban regions, completed grammar school at the secondary education level, well-educated parents with academic degree were confirmed as factors associated with student adaptation in higher education. In line with these findings, a recent doctoral study (Simeunović, 2015) developed a prediction model of academic success with the use of learning analytics on the basis of students' socio-demographic characteristics and data about academic behavior, personality traits, motivation, self-perceptions, attitudes towards learning, emotion, curriculum and teaching evaluations. The model also includes recommendations for educational changes as means to educational improvement that would potentially lead to increased student satisfaction and better academic outcomes.

Finally, the evidence from Portugal, to a large degree, is also consistent with the other partner countries in regard to the contribution of socio-demographic, personality, social and institutional factors to adaptation in higher education. First, achievement in secondary school is a strong correlate of the academic performance of first-year university students. Interestingly, it is stronger than students' adaptive experiences in higher education (Freitas, Raposo, & Almeida, 2007). As in the case of Greece, female students experience highest levels of adaptation to the new academic context (Rodrigues, 2010), although they tend to report more anticipated difficulties in social integration and autonomy one week before the beginning of the classes (Araújo, Santos, Noronha, Zanon, Ferreira, Casanova, & Almeida, 2016). The same was true for first-generation students, that is, students whose parents did not have higher education, and students attending social sciences and humanities. As far as personality factors and social support are concerned, both of them have been identified as significant predictors of personal and emotional adaptation to higher education (Amorim, 2016; Tomás, Ferreira, Araújo, & Almeida, 2014).

Final remarks for factors associated to student adaptation to higher education institutions

The above analyses focused on student adaptation to higher education, and a number of significant correlates and/or predictors have been identified in the international literature and in the SUnStAR partner countries. As in the case of drop-out, adaptation in university (academic, social, emotional) is a complex multivariate phenomenon with great individual differences as a result of both individual and contextual factors. Less-adapted to the university students have higher probabilities for poor academic outcomes and academic failure, for non-completion and drop-out. At the same time, they are less satisfied with their studies and university life, they cope with the new challenges less successfully, experience poor social support and less positive emotions, and they are inclined for mental health difficulties and poor well-being, in general.

The question that is raised at this point is what universities and higher education institutions can do to support those students who are at risk to quit university. Are there any preventive measures they can take? The World Health Organization invites universities to become caring communities for their students in order to promote their physical and mental health as well as their welfare (see Bernardo et al., 2016). As a response to this invitation, higher education institutions should change in order to meet students' needs, especially those students' who are vulnerable to display adaptation difficulties that, in turn, make them at risk for dropping out (Etzel & Nagy, 2016; Gillet, Morin, Huyghebaert, Burger, Axel Maillot, Poulin, & Tricard, 2017). Recommendations for good practices and strategies towards this aim will be presented in the next section.

7. Identify existing services/strategies/projects to prevent drop-out and their success/impacts in your country

The above discussion about university students' drop-out and their adaptation to higher education has indicated, first, the complexity of the phenomena and, second, the increased scientific, institutional, social and political visibility they enjoy during the last years. European Union has acknowledged the importance of reducing dropout and increasing completion rates in higher education as key elements towards the attainment of the Europe 2020 strategy, according to which at least 40% of 30-34 year old European citizens should complete higher education. This goal indicates the focus of Europe on the development of high-level knowledge and skills and innovation as a response to Europe's knowledge-intensive economic needs and, at the same time, as a means for the promotion of social justice (European Commission, 2015, p. 7).

One of the key findings of a recent comparative study the European Commission has conducted (see European Commission, 2015) focuses on the "increased institutional responsibility as a requirement for study success" (p. 9). How this increased responsibility can be translated into action? How universities will become "caring communities" for their students where their growth, mental health, and welfare will be advanced?

The psychological theory of Person-Environment Fit could be used in an attempt to answer the above questions. The main principle of the theory, which has a long history in psychology, is that the characteristics of an individual (needs) and the characteristics of the immediate environment (opportunities) jointly determine the individual's behavior. Moreover, both the person's needs and the environmental opportunities should be theorized within a developmental perspective with the individual's growth, or lack of growth, to be the result of the congruence or incongruence between the person and the environment (Hunt, 1975). The theory has been influential in several fields of psychology such as the developmental (Eccles & Midgley, 1989; Eccles, Midgley, Wigfield, Buchanan, Reuman, Flanagan, & Maclver (1993), the educational (Midgley, Middleton, Gheen, & Kumar, 2002) and the organizational one (e.g., Edwards & Ship, 2007).

For higher education, the theory of Person-Environment Fit for academic success (Etzel & Nagy, 2016; Li, Yao, Chen, & Wang, 2013; Schmitt, Oswald, Friede, Imus, & Merritt, 2008) highlights the congruence between students' characteristics and the opportunities the higher education institution offers to students. This congruence between a person's characteristics and the corresponding characteristics of the environment a person belongs to is realized in regard to three dimensions: (i) person-organization fit (the degree of congruence between individual and organizational values, in

university settings the congruence between the student's interest and the course s/he attends is a facet of this kind of fit), (ii) needs-supplies fit (the degree of congruence between the student's basic and psychological needs and the need reinforcers of the university), and (iii) abilities-demands fit (the degree of congruence between a student's skills and the requirements of the university) (for more details see Edwards & Shipp, 2007). In the context of higher education, perceived person-environment fit predicted academic satisfaction, academic performance, and intention to change field of study or quit in case of low perceived fit (e.g., Etzel & Nagy, 2016; Li et al., 2013; Schmitt et al., 2008). Thus, a basic hard-core idea for reducing drop-out and increasing completion rates has to do with the satisfaction of the above three levels of person-environment fit or, in our case, of student-higher education institution or university fit.

Towards this aim and taken into account the scientific evidence about drop-out and adaptation to higher education as presented earlier, each level of the student-university fit will be discussed, and a number of recommendations will be provided. However, the three levels may also be seen as interrelated and not fully discrete, and recommendations for one level may be beneficial for another level of fit, as well. For example, the interest–course fit may be seen in relation to needs–supplies fit (the university provides choices to student which might be closer to her/his interests and satisfy, at the same time, the need for autonomy or for being involved in personally meaningful tasks). Similarly, the abilities –demands fit may also been seen in relation to interest–course fit (better alignment between a student's interests and her/his field of studies affect student's effort and level of work and a better abilities-demands fit is more likely to occur).

A. Student Interest – Course/Field of Studies Fit

The congruence between student interest and the characteristics of her/his field of studies can be supported by the higher education institutions in the following ways:

- Improving curricula and teaching quality to strengthen students' scientific interest and commitment to their studies (e.g., up-to-date programmes of study, student-oriented teaching methods and effective instructional strategies based on recent literature about learning and instruction, teaching infrastructure and resources, extensive and informed use of new technologies, reduced number of big audiences, workshops and seminars involving team work, students' active engagement in the learning process, training opportunities, better students - staff ratio etc.)
- Well-informed and frequently updated websites providing detailed descriptions of the faculties, schools, and departments of an institution. Further, all faculties, schools and

departments should also provide detailed descriptions of their goals, programme of studies, and learning outcomes. The aim is prospective students to make informed decisions and avoid fields that do not fit well to their interests.

- Professional development courses to faculty members on current literature on learning and instruction in order to improve their teaching methods and instructional practices, better use and take advantage of new technologies, adopt self-regulated learning strategies and team work in their teaching etc.
- Closer ties with pre-tertiary education sectors and openness to society in order prospective university students to become better aware of the different fields of study and select the most suitable for them (e.g., career days, researcher’s night, universities go to cities, university labs open to students’ visits, welcome days, professional development courses offered to secondary education teachers and career counsellors, etc.).
- Closer collaboration with educational policy makers regarding admission systems to university, flexibility measures to change courses or field of studies so that student’s interests to better fit with his choices.

B. Student Needs – Institution Supplies Fit

Especially for needs-supplies fit, psychological theory and research have been notable. Different theoretical perspectives such as stage-environment fit (Eccles & Midgley, 1989; Eccles et al., 1993; Gutman & Eccles, 2007; Midgley, Middleton, Gheen, & Kumar, 2002) and self-determination theory (SDT; Deci & Ryan, 2000) have emphasized the necessity of an alignment between individual’s needs and environmental opportunities. Specifically, positive cognitive, motivational, affective and behavioral outcomes are more likely to occur when changes in needs are matched with changes in the affordances offered by the environment at certain phases or stages of life in a way that individual growth is enhanced (e.g., Midgley et al., 2002). For example, when students move from elementary to junior high-school (early adolescents) usually perceive negative changes in the classroom compared to elementary school and they experience motivational decline and more negative self-perceptions (Eccles & Midgley, 1989). Alternatively, within SDT, the satisfaction of autonomy, relatedness, and competence as basic needs constitutes a prerequisite for well-being, intrinsic motivation, optimal functioning and growth (e.g., Vansteenkiste & Ryan, 2014). Thus, we suggest the characteristics, opportunities and affordances of the universities need to be aligned with the developmental needs of young people or emerging adults (see earlier in this section). In other words, universities as learning and social environments should satisfy the academic, personal, social, and emotional needs of young

people towards better adaptation, study success and completion, and well-being. Some ideas are listed below:

- Scholarships to students who face financial problems and are at risk to prolong and not to complete their studies. This is a useful strategy, especially for students who work in parallel with their studies and spend much time out from the university. Other types of funding include mobility grants, performance-based grants etc. However, as the European Commission review emphasizes, “...funding is not a miracle cure” for study success and reducing dropping out! (European Commission, 2015, p. 9).
- Support and guidance to students at risk for study non-completion and drop-out. Specifically, counselling services should be offered to students’ with a vulnerable motivational and emotional profile (e.g., fear of failure, academic self-handicapping, procrastination, avoidance of help seeking, maladaptive attributional style, negative academic emotions, etc.). Help seeking reserves a special note here since many students do not ask for help, although they are aware they need it in order to overcome a difficulty they face (academic or psychosocial). Thus, creating help-seeking friendly universities is also a major goal (e.g., Karabenick & Berger, 2013; Karabenick & Gonida, 2018).
- Promotion of students’ psychosocial and emotional skills at a primary prevention level (e.g., communication skills, conflict resolution, self-esteem, emotional understanding and regulation, stress management, etc.). As described earlier in the previous sections, students who are socially and emotionally competent are more likely to persevere with their studies.
- Mental health services should also be provided to students who face serious challenges (e., anxiety disorders, depression etc.). Specialized treatment is required for students’ well-being as well as for study completion reasons.
- Career services to provide support to students’ educational and vocational prospects (e.g., provision of information about postgraduate studies and available courses, scholarships, information and links with the labour market, job strategies, preparation for job interviews, support to students who wish to change their field of studies, etc.)
- Professional development courses to faculty members focused on psychoeducational issues (e.g., knowledge about youth and emerging adulthood, student and teacher motivation, help seeking, teacher fairness, mentoring, students with special needs, migrant students etc.) so that faculty members play effectively their tutorial role (e.g., Bernardo et

al., 2016). Transforming universities to caring communities, to a large extent, has also to do with staff members and how they interact with their students in or out of the classroom.

- Organizing social integration activities, cultural events, provision of resources (e.g., special rooms for a theatre group to practice)

An issue which is important in regard to the support services offered to students and have to be mentioned is their visibility. Specifically, services like those referred above are somehow offered to the students in many universities, but the students are not aware of them. This is usually due to poor dissemination practices on the part of the university. Moreover, taking into account their frequent segmentation in different offices, students (professors, as well) have difficulties to identify which type of service is offered by whom. Better dissemination practices aiming to students but also to staff are required.

C. Student Abilities – Institution Demands Fit

The congruence between student abilities and institutional demands can be supported by the higher education institutions in the following ways:

- Well-informed prospective students about the demands of an academic course (e.g., informed websites).
- Strong commitment to quality education which is the key to effective retention (Tinto, 1993).
- Professional development courses to faculty members on current literature on learning and instruction (see also above in regard to the Interest – Course Fit). Improved teaching methods, instructional and evaluation practices, better use of new technologies, adoption of instructional practices requiring team work and students' active engagement to strengthen their knowledge and skills and improve their abilities. The idea is how faculty members can contribute to students' abilities advancement and history of successes, as well as to building high self-efficacy beliefs and academic perceived competence.
- Provision of personalized academic support to students with special educational needs (e.g., learning disabilities, ADHD students etc.).
- Provision of support to students from different ethnic backgrounds
- Language courses to students who don't have a good command of the teaching language

Taking into account the above analysis and the national reports of the SUnStAR partners, it is clear that a number of actions have been taken in all countries to support university students as

opportunities or supplies to their students' needs. It should be noted, however, that most of these actions have been taken mainly to support student adaptation to university and via adaptation to support study success and drop-out decrease. This is more evident in the case of Greece where drop-out is neither defined nor clearly measured (see Q3 above), although student counselling centers have been established since '90s in most of the universities to support student learning and psychosocial adaptation, career planning and transition to labour market. The same holds true for Serbia, where drop-out is still in an early phase, and even in Portugal, where university drop-out has been acknowledged as a phenomenon that needs treatment, the emphasis of student centers remains on academic and social adaptation and on coping with the academic and social challenges in the University context (e.g., Almeida, Soares, & Ferreira, 2002; Mendes, Caetano, & Ferreira, 2016; Soares, Almeida, Diniz & Guisande, 2006; Vasconcelos, Almeida & Monteiro, 2009).

Germany is the only country among SUnStAR partners that has established specific services aiming to reduce drop-out. Despite the different approaches to how drop-out is measured among German universities, mainly due to measurement challenges, drop-out enjoys recognition in higher education as a negative phenomenon which must be decreased. Almost every university in Germany collects data about drop-out or drop-out intention (Larsen et al., 2013), and students may ask for support and counselling services for university change or dropout on a regional or state level in Germany. These services are provided usually as a result of collaborations between higher education institutions, PES and chambers, although a single institution may also provide such services on a regional level, and may take the form of consultation hours, individual meetings or workshops, as well as online support. In addition to counselling focused on drop-out, university or course change, services about other alternatives are also provided (e.g., ICT study programs and professions or 2-3 years apprenticeship for the trade market) as well as information about financing opportunities and learning-related guidance (e.g., study skills and strategy use, time management etc.). Specifically for drop-out avoidance, early screening of students at risk, mentoring and greater flexibility are recommended as helpful strategies.

As far as the Portuguese higher education institutions are concerned, and as it was referred to above, they offer services to enhance students' interpersonal and social competencies (including the capacity for social acceptance and support of mates in the classroom) and to promote their academic self-regulation and their career adaptability attitudes and competencies (e.g., Araújo & Almeida, 2015; Araújo et al., 2015; Cunha & Carrilho, 2005; Ferreira, 2014; Lent, Taveira & Lobo, 2012; Lent, Taveira, Sheu, & Singley, 2009). Especially for the first year students, special pedagogical and psychological services have been organized in the beginning of their studies in order to support their adaptation and

academic success to the new environment (e.g., Cerdeira, 2005; Costa & Lopes, 2008; Pinto, Faria, Pinto, & Taveira, 2016). Moreover, in addition to the scholarships provided by the Ministry of Science, Technology and Higher Education, the universities also have a Social Support Fund that aims to reduce school drop-out due to economic reasons. This funding is supported by foundations, companies and other patrons. Beyond paying tuition fees, the fund can be activated in emergency situations - when students are no longer able to meet basic needs (food, health and housing).

With regard to preventive strategies and programs, Portugal has made significant progress. Over the last few years the phenomenon of school drop-out has proactively motivated the adoption of measures in some higher education institutions (e.g., 'Vale a Pena Estudar', launched by the Polytechnic Institute of Viana do Castelo, 'Working Group for the Identification of Causes of School Abandonment at the University of Évora', the 'Emergency Support Fund' of the University of Madeira). On the part of the State, the launch of the 'Retomar' Program (Despacho Normativo nº 8-A/2014, de 17 de julho) to promote re-entry into Higher Education, provided the granting of financial support to people who wanted to return to higher education after having left the study cycle. Ended by 2016, the 'Retomar' program was designed to allow the return to education and training in the context of higher education of students who wished to complete previous training or undertake a different training. In other words, the program encouraged the return of former students who had left the course of study before completion and attempted to face drop-out in higher education by taking into account criteria of social utility and employability and by promoting the superior qualification of young people who are neither working nor inserted in education or training courses. Another program named '+Superior' (Despacho nº 1447-A/2016, de 29 de novembro) aimed to support students who interrupted their studies, extended the scope to a greater number of regions, and increased by 29% the allocation of new scholarships. Finally, Portuguese universities have started collaborative preventive work with secondary education institutions to support secondary school students' academic achievement and career preparedness (e.g., Almeida & Castro, 2016; Freitas, Raposo & Almeida, 2007; Lent, Taveira, & Lobo, 2012).

Similarly, in Serbia the main focus of the Centre for Career Development is twofold with an emphasis on the first one: (i) to facilitate the connection with the workplace and the transition to labour market by providing internships, establishing professional goals, teaching students how to become more competent at writing CVs and letters of motivation; (ii) to provide counselling services to students regarding problems they encounter in the course of their studies, often related to learning and motivation issues (e.g., mastering efficient learning techniques, time management and motivation). Beyond the individualized services with students who visit the centre, guidelines about study skills are

available on the website of the centre. The website remains the main source of information about its role and activities, although presentations about the centre are organized at faculties from time to time in an attempt to disseminate the available services. Although four centre units exist in Belgrade, Niš, Novi Sad and Kragujevac with relevant activities, their capacities to provide assistance for students under the risk of dropping out from all state universities are limited (for example there are 6 employees at Belgrade Centre for Career Development, while Belgrade University has approximately 95.000 students).

Regarding drop-out related projects in Serbia, a common project of four universities (University of Belgrade, University of Novi Sad, University of Niš and State University of Novi Pazar), which focused on the support provided to low-income students and students from national minorities, indicated that faculties have adopted a long-standing practice of allowing students from low income families, national minorities or students with special needs to be exempt from paying tuition fees, whereas scholarships are generally awarded to the best students. However, in the absence of a monitoring system for these vulnerable groups of students, these types of support usually take place only on the basis of individual requests and decisions made by the dean or the faculty board. Other actions against non-completion of studies or drop-out have not been undertaken.

Finally, in Greece, the situation about student counselling closely resembles the situations in Portugal and Serbia. Student counselling centers in higher education offer psychological services aiming to support student learning, psychosocial adaptation, and mental health, whereas career services offices (which are different from the counselling centers) focus on career counselling, job strategies, preparation for job interviews, mentoring etc. and connect universities with the labour market (e.g., Kalantzi-Azizi, 1996; Kalantzi-Azizi & Hatzidimou, 1996; Kalantzi-Azizi & Karademas, 1997a, 1997b; Kalantzi-Azizi, & Matsaka, 1996; Kounenou, Koutra, & Katsiadrami, 2011; Malikioti-Loizos, 1989; Milousi, Platsidou, & Samara, 2008; Navridis, Dragona, Miliarini, & Damigos, 1990; Papadioti-Athanassiou & Damigos, 2003). During the last years some universities have established observatories to monitor the studies trajectories of vulnerable groups of students like students with special needs, students with a minority background, foreign students, students with serious health problems in order to provide tailored-made support for study completion and psychosocial adaptation. For example, the Observatory for the Vulnerable Social Groups at the Aristotle University of Thessaloniki has conducted studies during the last years in order to find out the progress of these students and identify the factors which constitute the risks for them to prolong or quit their studies (see AUTH Observatory, 2016).

Other specialized services for dropping-out (e.g., for the general student population) are not provided; however, a student who has difficulties with study completion and/or intends to drop-out and needs help may go to the counselling center. The policies against non-completion of the studies in Greece mainly remain at providing funding to the universities based on the number of students, and the provision of information in order students to become more qualified and make better choices about their studies. As in Portugal, a Social Support Fund for low income students has also been developed in several Greek Universities. A new funding formula has been adopted since 2012 based on quality criteria rather than the number of enrolled students. Even though recent reforms (2012) intended higher institutions not to be funded for the number of enrolled students, but for performance measured by quality indicators, no such implementation has been forced.

Regarding preventive measures or policies, obviously no specific policy against dropping out exists in Greece, since dropping out has not been acknowledged as a problem in higher education that urges support measures. Few political initiatives towards this problem some years ago did not last long, although the problem has been discussed in the media and scientific papers about the problem of ‘inactive’ students have been published (e.g., Katsikas & Dergiades, 2006; Kyprianos & Koniordos, 2003; Sianou-Kyrgiou, 2008, 2009, 2013). However, special mention should be made of a research project (“Thalis”) on non-completion and drop-out which has been recently completed (Panagiotopoulos, 2015). The project, among others, focused on inactive stagnant students (students with >N+2 years) and the issue of access to higher education. It provided a detailed description of the current situation as well as recommendations for improvement. Finally, it should be added that, at the secondary education level, School Vocational Guidance Services provide career guidance, support and information to high school students before they make their choices for higher education. Although not all students make use of these services, in a way, this could also be considered as an early prevention measure for limiting drop out from university later on.

8. University students’ intention to drop-out and the SUnStAR Project

As have been presented above, University students’ drop-out is a multifaceted and complex phenomenon linked to a large number of factors: individual (academic/cognitive, personality and motivational), socio-demographic and institutional. Similarly, adaptation to Higher Education is related, to a more or less extent, to the same factors. For clarity reasons, Table 7 provides the profile of students

who are at risk for dropping out. Their profile consists of characteristics pertaining to each of the above three broad categories of factors. Including institutional factors in the students' profile should have not been surprising because the probability for a student to be at risk for dropping out substantially increases if s/he is enrolled in a University that has specific characteristics.

Some of the factors related to students drop-out, as well as to a successful adaptation to University, are related to the educational system organization (e.g., admission system or mobility possibilities within the system) or to socio-demographic variables (e.g., gender or socio-economic status), which are difficult to be the focus of any intervention. Nevertheless, individual variables and contextual factors related to the fit between the institution and the student can be addressed through a carefully designed intervention. Based on the theory of Person-Environment Fit for academic success in higher education which was described in detail earlier (e.g., Etzel & Nagy, 2016; Li, Yao, Chen, & Wang, 2013; Schmitt, Oswald, Friede, Imus, & Merritt, 2008), SUnStAR aims to develop an intervention approach for all university students with a special focus on students at risk for dropping out. It involves the following basic axes: (i) raising student awareness about her/his strengths and weaknesses as well as about her/his relationship with the university as a learning context (person level), (ii) providing universities with a strong tool available to all students for self-reflection, a number of self-directed online didactic modules to be used as sources of students' support and a platform making all institution and community specific sources of support more visible (environment level), and (iii) assisting university counselling centers with tools that would concretely support their specialized work with students (person-environment fit level).

SUnStAR aims to support students who are already at risk for dropping out as well as to prevent students from being at risk for dropping out (e.g., via early warning signals using the SUnStAR tools). This can be realized either as an individual process or via the university counselling centers. It should be noted that the individual support offered by SUnStAR to each potential student who will make use of it, is extremely important given that a great number of students are not aware of their study situation, their potential and their risks for academic failure and drop-out. These students are usually hesitant in asking needed help and avoid typical support services such as university counselling centers. Thus, SUnStAR aims to support all those students who prefer a more individualized path of support.

In accordance with the theoretically grounded three axes described above, SUnStAR involves the following multiple stages:

- The development of a Self-Reflection Tool as a departure point for raising students' awareness about her/his strengths and weaknesses in relation to factors pertaining to

successful adaptation to university and dropping out, as well as about their relationship with the university and their study situation. This first screening is necessary as a warning sign, either early or late (depending on the situation of the student who makes use of it), about the student's study situation and the identification of potential fields that could constitute a risk for the continuation of studies. Such an evaluation should include measures related to (i) individual variables representing student's strengths and weaknesses, and (ii) student's perceptions about her/his learning environment that is about her/his University studies. Based on the detailed literature review about the profile of students (see also Table 7), individual variables should address academic/cognitive variables (e.g., cognitive and metacognitive strategies, self-regulation skills such as help seeking and time management), personality variables (e.g., emotional stability, anxiety, aspects of conscientiousness such as procrastination), and motivational variables (e.g., academic efficacy beliefs, intrinsic and extrinsic motivation, value dimensions such as attainment, interest, utility and cost, personal development goals, academic emotions). As regards the variables related to student's perceptions about her/his university as learning environment, the SRT should include student perceptions of issues related to the programme of studies and its organization, to the infrastructure offered by the university, the quality of teaching and teacher-student relationships, as well as the quality of social relations and cooperation among students.

- The development of an Online Learning Platform which would provide users with didactic modules that can inform them about critical issues related to minimizing the risks for dropping out and to successful adaptation. Students' familiarization with such important issues aims to enhance their adaptation to University and to reduce the likelihood of drop-out. Based on the literature review (see also Table 7), modules on self-regulation and learning strategies, resilience, motivation, and social networking should be developed. Additional modules, potentially useful to users, such as career counselling and a module providing information and support to those who have already decided to abandon their studies would be also useful.
- Finally, a platform with information about sources of support (e.g., financial support opportunities, grants, counselling centers) available at the University, at the Local Community or at the National level will also be developed in an attempt users to be well-informed about available opportunities and support services that could potentially assist them when they experience difficulties in their studies and have second thoughts about

their completion. The two tools (Online Learning Platform and Information about the Services) can be complementary in supporting students who intent to quit their studies and can contribute to a successful adaptation to University.

As already referred to above, the SUnStAR tools (the Self-Reflection Tool, the online didactic modules and the online platform with information about the support sources) can be realized either as an individual process by the student or via the university counselling centers. In both cases, however, these modules will be available via the universities' websites (in addition to the SUnStAR website) making universities and higher education institutions more friendly learning environments for students' adaptation offering, at the same time, support to students who are at risk for dropping out. Students may choose the didactic module that better fits to their profile in terms of their weaknesses and vulnerability (as this would have been evaluated by the SRT) or choose all modules for personal development reasons any time they wish. They may also search for available sources of support in the university campus or the local community if they need it.

The above analyses explain how SUnStAR will realize the implementation of the person-environment fit theory for academic success in higher education in an attempt to support students who experience difficulties in their studies and are at risk for dropping out.

9. Concluding Remarks

The study of drop-out in higher education has gained political and social visibility in Europe during the last years because of the importance of study success on the European policy agenda (European Commission Report, 2015). The researchers' community has approached drop-out in an attempt to unravel its multiple antecedents and correlates in order preventive measures to be designed for universities. However, it is clear that (i) more research is still needed, especially within particular contexts, (ii) a more holistic, systemic framework combining individual, social and institutional factors seems more appropriate both for basic and for applied purposes since drop-out is a multifaceted problem and the evidence up to now is rather fragmented, and (iii) universities lack behind research evidence in terms of acknowledging drop-out as a problem that needs treatment, as well as of translating research into action. Special mention should be also made to national educational policies which may set obstacles in facing dropping-out.

Improving institutional awareness about dropping out is required in order (i) specialized supportive services to be developed for students at risk for not completing their studies and dropping out and (ii)

institutional changes to take place in order higher education institutions to become more friendly to student adaptation learning environments. Theories like the theory of Person-Environment Fit for academic success which described above will be very helpful to universities in order to better organize their opportunities and supplies to the students towards an optimal fit with their needs. SUnStAR provides a promising framework towards this direction offering support at the student level, at the institution level and at the level of person-environment fit.

Table 7

Students at risk for dropping out: Their multi-faceted profile

Individual Factors			Social-demographic Factors	Institutional - Academic Factors
Academic / Cognitive	Personality	Motivational		
<p>Approaches to learning / SRL strategies: (i) passive attitude towards learning, lack of purposeful engagement in the learning process (ii) poor cognitive and metacognitive strategy, (iii) non-successful study time management and effort regulation, (iv) avoidance of help seeking or executive help seeking</p>	<p>Conscientiousness: Low scores in conscientiousness, difficulties to organize their studies, more likely to procrastinate and to give up more easily when demands increase and difficulties raise.</p>	<p>Motivational beliefs: (i) Less intrinsically but more extrinsically-motivated, amotivation is also possible (ii) low perceived academic competence and low self-efficacy beliefs for specific courses (iii) low value to studies and academic success, high perceived cost (required effort for success in a course, lost opportunities due to the high demands of a program) (iv) maladaptive goal and attributional profile</p>	<p>Age and Gender: (i) male students and (ii) older students are more likely (<i>although the evidence is inconsistent</i>)</p>	<p>Structural characteristics: (i) non-flexible educational system (e.g., impossible to change field of studies, absence of re-sit exams) (ii) poor administrative support for new and complex environments such as universities (iii) lack of services providing to students' psychological and educational support to overcome difficulties (iv) lack of social integration activities which could facilitate student social and emotional adaptation</p>
<p>Complex problem solving skills: Failure in dealing with complex, changing and demanding environments such as universities,</p>	<p>Resilience / Academic hardiness: (i) low resilience to cope with aversive and stressful situations in the university (e.g.,</p>	<p>Academic Emotions (i) negative academic emotions related to personal achievement or to university studies are more</p>	<p>Socio-economic background: (i) low parental educational level (ii) low family income (iii) low financial support</p>	<p>Curriculum and teaching quality: (i) old or very frequently changing programme of study (ii) bad students - staff ratio etc. (iii) teacher-oriented methods and non-effective instructional strategies</p>

<p>problematic facing of new challenges</p>	<p>exams, challenging assignments or stressful events) (ii) low commitment to studies, less control and resistance to academic challenges</p>	<p>likely (e.g., high anxiety and boredom and anxiety (ii) positive academic emotions (e.g., enjoyment, pride) are less likely to be experienced</p>		<p>(iv) poor teaching infrastructure and resources (v) lack of requirements for students' active engagement in the learning process (vi) lack of training opportunities (vii) absence of teacher and peer mentoring</p>
<p>Pre-tertiary Achievement: (i) Usually low secondary school achievement and/or low examinations' records for the University. (ii) field of studies not among the student's first choices, low satisfaction from current studies.</p>			<p>Minority background: (i) ethnic minority origins (ii) migrant background</p>	
<p>GPA_University studies: Low to average grades and number of ECTS by semester, frequent failure or non- participation in the classes and exams, prolongation of graduation time, gradually alienated from the University context.</p>				

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