

## The Effect of Sense of Meaning in the First-year of Study on Throughput at an Institution of Higher Learning in South Africa

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**ABSTRACT** The paper evaluates the relationship between sense of meaning and throughput rate with a random sample of alumnae (N=101) from a university of technology, in South Africa, (age range = 27 to 30 years, females = 73%). Data was gathered using the Purpose in Life Test (PIL), Life Stressors and Recourses Inventory (LISRES-Y), and Biographical Questionnaire. Multiple regression analyses were performed. The hierarchical F-test was used to determine whether the contribution by a specific variable to the R<sup>2</sup> value is statistically significant. A significant correlation ( $p < 0.01$ ) was found between sense of meaning and throughput rate. On its own, the PIL scores explained 23.4 percent of the variance in throughput rate. As a result, the current research discovered that a high sense of meaning, in the first year of study, could be used to predict long-term achievement at institutions of higher learning.

### INTRODUCTION

One of the problems facing South African universities is the relatively low throughput and success rate, which was seventy-four percent in 2010, compared to a desired national norm of eighty percent. According to reports, only eighteen percent of South African students who registered for a three-year degree managed to graduate in record time, and fifty percent of those who registered dropped out (Nkosi 2015; Seepe 2005). Statistics released by the Council for Higher Education in 2012, reported that only sixteen percent of students who registered for degrees in 2005 graduated within the specified time. This figure is well below the national norm of twenty-five percent for full-time students studying towards a three-year qualification (CHE 2012)

One of the important priorities facing universities is access to success; as a result universities are seeking ways to ensure that students succeed. For this reason, university administrators are looking at best possible ways to predict academic success at institutions of higher learning, so they can use them in their admissions process to determine applicants' possibility of successfully completing their studies (Gifford et al. 2006).

Coupled with predicting throughput rate is monitoring and ensuring that the motivation levels of students are high especially in the first year of study which is considered to be the defining time for the rest of their university careers (Busse 2013; Cadet 2008; Campbell and Mislevy

2013; Hull-Blanks et al. 2005; Jackson et al. 2003; Morrow and Ackerman 2012; Shelton 2003; Tinto 1993). As a result, strategies to strengthen the students' motivation levels should be put in place because a number of talented young people are failing to achieve at the same level of their academic potential (Balduf 2009). It is for this reason that a motivational factor such as sense of meaning could be significant in ensuring persistence and better adjustment amongst students (Makola and Van Der Berg 2010; Mansfield et al. 2009).

### Sense of Meaning and Higher Education

Several researchers have made significant recommendations on how university personnel can assist students in their search for meaning, for example, in playing a mentoring role, incorporating issues of purpose in life into every aspect of their work with students and much more (Chambers and Parks 2002; Chickering 1969; Humphrey 2005; Moran 2001; Reisser and Chickering 1993). However, most of the research which was conducted amongst university students focused mainly on how it relates to psychological issues, which may indirectly impact students' retention or attrition, such as anxiety, depression, self-esteem, engagement in university campus activities and self-efficacy (DeWitz et al. 2009; Molasso 2006).

Earlier studies found a significant correlation between meaning orientation and scholastic achievements (Martin and Martin 1977; Nack-

ord 1983). The results of a research by Greenway (2005) reported that academic engagement is a strong predictor of success amongst university students, and that meaning in life was significantly predictive of a student's level of engagement. Several studies by researchers showed a significant relationship between meaning in life and academic performance amongst graduate students (Benejam 2006; Chen 2014; Makola 2007; Turashvili and Japaridze 2012).

In a research conducted with first-year students, three variables correlated significantly with academic performance, namely, purpose in life, grade twelve results, and parents as a resource; however, it was mainly the variable—purpose in life—that showed a significant contribution to the criterion (Makola 2007). On its own it explained fourteen point nine percent of the variance in first-year academic performance (Makola 2007). In addition, a research by Olivera-Celdran (2011) also reported that sense of meaning was one of the variables, which contributed significantly to the prediction of cumulative GPA amongst college freshmen. Thus the research suggests that college freshmen who are more purposeful are more likely to have higher Cumulative GPAs at the end of their freshman year.

In his keynote address to the Pan Pacific First Year experiences Conference, Vincent Tinto mentioned that seventy-five percent of students who do not complete their studies attribute the reasons for this to difficulties encountered in the first-year of study (Tinto 1995). The results of a research conducted by Makola and Van Der Berg (2010) revealed that sense of meaning is one of the constructs which helps students tolerate life stressors more effectively, thus improving adjustment to the demands of life, including academic demands in the first-year of study. This is due to the fact that the meaning potentials of participants who scored high on the Purpose in Life Test (PIL) are different from those who scored low on the PIL. What is distinctive about participants who scored high on the PIL is that they see meaning in their studies, are more interested in the service they will provide, and they maintain positive attitudes. Thus, students with a high sense of meaning are more likely to persist with their studies (Makola 2007). On the contrary, research by Olivera-Celdran (2011) reports that even though a purposeful life was a statistically significant predictor of academic

performance in the first-year of university, this variable is not a statistically significant predictor of persistence.

Some of the researchers who investigated the effect of sense of meaning on throughput did so by incorporating it with wellness related variables like healthy eating patterns, life satisfaction, goal setting, and prayer and meditation. For example, in a research conducted by Du Plessis and Botha (2012), “the prediction models clearly identified wellness-related variables as important predictors of first-year academic performance (who will pass and who will fail), of retention (who will stay and who will not stay) and of success in the minimum period.”

It is for this reason that additional evidence is required to determine whether possessing a high sense of meaning in the first year, can be a significant predictor of long-term achievement.

### Objectives of the Study

A sizable number of studies have been conducted on the impact of sense of meaning on first-year academic performance (Benejam 2006; Chen 2014; Makola 2007; Olivera-Celdran 2011; Turashvili and Japaridze 2012). However, according to Chen (2014), “researchers still have limited information on how long the positive effects last, but they predict that just a small shift in students' attitudes could trigger a chain reaction of stronger academic performance and resilience that builds upon itself and endures over time. As a result, it is the objective of the current research to investigate the role that can be played by a high sense of meaning in the first year of study in increasing throughput rates at the university level. In other words, the research wanted to investigate whether the levels of meaning in their first year of study can be used as a significant predictor of long-term achievement.

## METHODOLOGY

### Research Design

A correlation design has been used with throughput rate as the criterion variable, and meaning in life, parent as a resource and first-year performance as predictor variables.

### Research Hypothesis

Statistics indicate that South African students are dropping out of institutions of higher

learning at an alarming rate (Macfarlane 2006). This research investigates the role of a sense of meaning in improving academic success at university.

The researcher postulates that students with high levels of meaning are more likely to complete their studies at university.

The following three research hypotheses have been formulated for the paper:

1  $H_0$  Sense of meaning is not significantly related to throughput rate.

1  $H_1$  The levels of meaning experienced by students are positively related to throughput rate.

2  $H_0$  Achievement in the first year of study is not significantly related to throughput rate.

2  $H_1$  Academic performance in the first year of study is positively related to throughput rate.

3  $H_0$  Parental support of first-year students is not significantly related to throughput rate.

3  $H_1$  Support parents provide to students in the first year of study is positively related to throughput.

### Participants

They were 101 alumnae from the Faculty of Management Sciences, from a satellite campus of a university of technology, in South Africa. The research is a follow-up of a study conducted with the same participants in their first-year of study to investigate the relationship between the students' sense of meaning and the extent to which it influences first-year academic performance ( $N=101$ ). Participants were selected randomly from the latter faculty because it is the largest of the three faculties, at the satellite campus. There were 150 first-year students in the faculty, and a total student population of 1500 at the satellite campus.

Defining characteristics of the research participants:

- ♦ Age (in 2013): group mean (27.3 years) and standard deviation (1.3). Youngest participant (25 years) and oldest (30 years).
- ♦ Gender distribution: 27 (26.7%) males and 74 (73.3%) females.

### Tool

The first measuring instrument, which the researcher used, is the *Purpose in Life Test (PIL)* of Crumbaugh and Maholick (1969). This tool

was administered to measure the meaning potentials of students. The PIL was designed to operationalize Frankl's ideas and to measure an individual's experience of meaning and purpose in life. It is a 20-item scale, and each item is rated on a 7-point scale and total scores therefore range from 20 (low purpose) to 140 (high purpose). According to the criterion provided by Crumbaugh and Maholic (1969), PIL scores of 92 or less are indicative of low meaning, and scores of 112 and more indicate definite purpose in life, with moderate meaning in between. A Cronbach's alpha coefficient of 0.84 was observed for the study sample. The PIL has also been widely used in the past (Du Plessis 1982) and more recently (Van Jaarsveld 2004) in South African studies. In a research by Van Jaarsveld (2004) an alpha coefficient of 0.86 and a test-retest reliability coefficient of 0.85 were obtained for the PIL.

The second instrument, which the researcher used, is the *Life Stressors and Resources Questionnaire-Youth Form (LISRES-Y)* (Moos and Moos 1994). This tool was administered to measure a variety of stressors, such as, living conditions, financial problems and social support, as well as social resources such as parental support. The questionnaire consists of 209 items broadly divided into two sections, namely, life stressors and social resources. The sub-scales of life stressors (SS) are:

- ♦ Physical Health (PH),
- ♦ Home and Money (HM),
- ♦ Parents (PAR),
- ♦ Siblings (SIB),
- ♦ Extended Family (FAM),
- ♦ School (SCH),
- ♦ Friends (FR),
- ♦ Boyfriend/Girlfriend (BG) and,
- ♦ Negative Life Experience (NLE).

The sub-scales for social resources (SR) are:

- ♦ Parents (PAR),
- ♦ Siblings (SIB),
- ♦ Extended Family (FAM),
- ♦ School (SCH),
- ♦ Friends (FR),
- ♦ Boyfriend/Girlfriend (BG), and,
- ♦ Positive Life Experience (PLE).

A high score indicates a high level of stress or the presence of adequate resources in a specific domain. This measuring instrument has proved to be reliable and valid. The internal consistency index ranges from 0.79-0.88 for Stressor scales and from 0.78-0.91 for the Social Re-

sources scales. The Cronbach alpha-coefficients in a South African research conducted by Wissing (1996) ranged between 0.79 and 0.88 for the life stressors and between 0.78 and 0.91 for the social resources scales.

The researcher also used a *biographical questionnaire*. This was self-compiled and it was used to gather the background information of each participant, such as age, previous scholastic results, home language, and the likes.

Student records were used to obtain data on students who completed their qualifications, and those who dropped out. The latter records were used to determine the throughput rate.

To investigate the reliability of the PIL and LISRES-Y, alpha coefficients were calculated for the current sample. The analysis was done with the help of the SPSS computer program (SPSS Incorporated 2001) as illustrated in Table 1.

### Procedure

The following three stages were implemented.

*Stage One:* The first stage involved gathering data in the first semester of 2005 with a random sample of 101 first-year students from the Faculty of Management Sciences. The grade twelve results, PIL, LISRES, Biographical Questionnaire, two focus group sessions and individual interviews were used to gather data in the first semester of the first-year of study. Amongst all other variables included, the outcome of Stage One revealed that three variables correlated significantly with academic performance, they are Purpose in life, Grade twelve results, and Parents as a resource; however, it was mainly the variable Purpose in life that showed a significant contribution to the criterion. It was for this reason that the latter variables were used in the longitudinal research.

*Stage Two:* The second stage was gathering data from the student administrator's office on academic performance at the end of the second semester of the first-year of study. A qualitative and quantitative analysis of the data was conducted and presented.

*Stage Three:* The third stage was gathering of data from the academic administrator's office on throughput rate (criterion), as well as from the variables, which were best predictors of first-year performance in the second stage, that is PIL, Parent as resource, and first-year academic performance. Matric results were replaced by first-year performance as one of the predictor

variables. Subsequently, throughput rate became the criterion variable. It should be noted that the same participants were used during the first, second and third stage of the research, whereby student records were used to obtain a trajectory of the academic performance. The latter records were also used to determine the throughput rate in 2007 and subsequent years, until 2013.

### Ethical Considerations

The following ethical issues were taken into consideration when conducting this research.

Permission to conduct this research was obtained from the Management of Central University of Technology, Free State. All students who participated in this research completed a consent form. Participants were assured that all information would be treated as confidential and anonymous.

The questionnaire was administered by the researcher, and completed individually by the participants. The latter were completed in the first-year of study, in 2005. Data was analyzed with a computer software program.

## RESULTS

The findings reported in Table 1 indicate that with the exception of the physical health and positive life events scales, acceptable internal consistency measurements were obtained. According to Nunnally and Bernstein (1994), coefficients of 0.60 and above are considered acceptable for non-cognitive constructs. Although the reliability of one of the scales (physical health) was not that high, it was decided to keep this scale in the analyses that follow because the coefficient was only slightly below 0.60.

**Table 1: Alpha-coefficients with respect to the PIL and LISRES-Y scales**

LISRES Scales/PIL		$\alpha$ -coefficient
Stressors:	Physical health	0.577
	Home and money	0.854
	Parents	0.864
	Friends	0.679
	Negative live events	0.761
Resources:	Parents	0.891
	Friends	0.830
Purpose in life (PIL)	Positive life events	0.600
	Total score	0.842

To investigate the research hypotheses, multiple regression analyses were performed. In this case, meaning in life, parent as resource and first-year performance are the independent variables, and the students' throughput rate is the dependent (criterion) variable. The method followed was to first determine the total variance explained by the predictor variables with regard to the criterion (throughput rate). The coefficient of determination or r-square ( $R^2$ ) was used to express the strength of the relationship between the predictor variables (meaning in life, parent as resource, first-year performance) and criterion variable (throughput rate).

A hierarchical  $F$ -test was used to determine whether the contribution by a specific variable to the  $R^2$  value is statistically significant. The way in which this test can be calculated is as follows:

$$F = \frac{(R^2_{y,1..k_1} - R^2_{y,1..k_2}) / (k_1 - k_2)}{(1 - R^2_{y,1..k_1}) / (N - k_1 - 1)}$$

Where,

$R^2_{y,1..k_1}$  = Quadratic multiple correlation coefficient for the large number of independent variables

$R^2_{y,1..k_2}$  = Quadratic multiple correlation coefficient for the smaller number of independent variables

$k_1$  = Larger number of independent variables

$k_2$  = Smaller number of independent variables

$N$  = Total number of cases (Van der Walt 1980).

When the significance of an increase in  $R^2$  is investigated, it is also necessary to calculate the effect size of the contribution by the predictor. The effect size indicates the contribution to  $R^2$  in terms of the proportion undeclared variance of the full model. According to Van der Westhuizen et al. (1989), the effect size of the individual contributions can be calculated in terms of  $f^2$  with the help of the following formula:

$$f^2 = \frac{R^2 - R^2_1}{1 - R^2_1}$$

Where,

$R^2$  = proportion variance declared by the full model

$R^2_1$  = proportion variance declared by the smaller number of independent variables.

According to Cohen (Steyn 1999), the following guideline values can be used:

$f^2 = 0.01$  : small effect

$f^2 = 0.15$  : medium effect

$f^2 = 0.35$  : large effect

Both the five percent and one percent level of significance were used in this research. The results that follow were obtained with the help of the GraphPad InStat version 3.10 for Windows, GraphPad Software computer program (Graph-Pad 2009).

The descriptive statistics (averages and standard deviations) with respect to all the relevant variables, for the qualitative component, were calculated and are presented in Table 2. The throughput rate was calculated by the number of years it took each student to complete a qualification. 'Parents as a resource' refers to the level of support each participant received from his or her parents, as measured by the LISRES-Y. As indicated in Table 2, a mean score of 2.37, and standard deviation of 2.29, was obtained for the criterion variable (Throughput Rate). In terms of the predictor variables, a mean score of 56.05, and standard deviation of 10.59, was obtained for the first-year performance; while a mean score 10.77, and a standard deviation of 5.95, was obtained for Parent as a Resource. Finally, a mean score of 110.07 and standard deviation of 18.11 was obtained for Purpose in Life (PIL).

**Table 2: Averages and standard deviations for the total research group**

Variables	N	X	SD
Throughput Rate (Criterion)	101	2.37	2.59
First-year performance	101	56.05	10.59
Parents as a Resource	101	10.77	5.59
Purpose in Life (PIL)	101	110.07	18.11

The ranges with respect to the Purpose in Life scores of all participants as well as those of participants with high, moderate, and low scores were calculated and are presented in Table 3. The information presented in Table 3 suggests that, out of 101 participants, there were 52 in the high meaning category, 29 in moderate meaning category and 20 in the low meaning category. As indicated in Table 3, the PIL ranges of partic-

**Table 3: The PIL ranges of all participants**

Participants	N	%	PIL Range
All Participants	101	100	62-140
Participants with High PIL	52	51	112-140
Participants with Moderate PIL	29	29	95-111
Participants with Low PIL	20	20	62-91

ipants who scored high on it ranged from 112 to 140, while those of participants with moderates PIL scores ranged between 95 to 111, and finally those of participants who scored low on the PIL ranged from 62 to 91.

Figures were also used to provide a scenario of participants in the respective categories. The percentage of all participants who completed their studies as well as those who dropped out of university is presented in Figure 1. As indicated in Figure 1, fifty-nine percent of participants managed to complete their studies while forty one percent dropped out of university. Again,

Figure 1 further indicates that only seventeen percent of the participants managed to complete their studies within the prescribed period. The accumulative percentage reveals that forty-eight percent of students completed their studies in four years. Amongst those who dropped out eighteen percent left at the end of their first-year of study, and an additional five percent in the second year.

The percentages of all participants who managed to complete their studies (N=60) are presented in Figure 2. As indicated in Figure 2, most (70%) of the participants who managed to com-

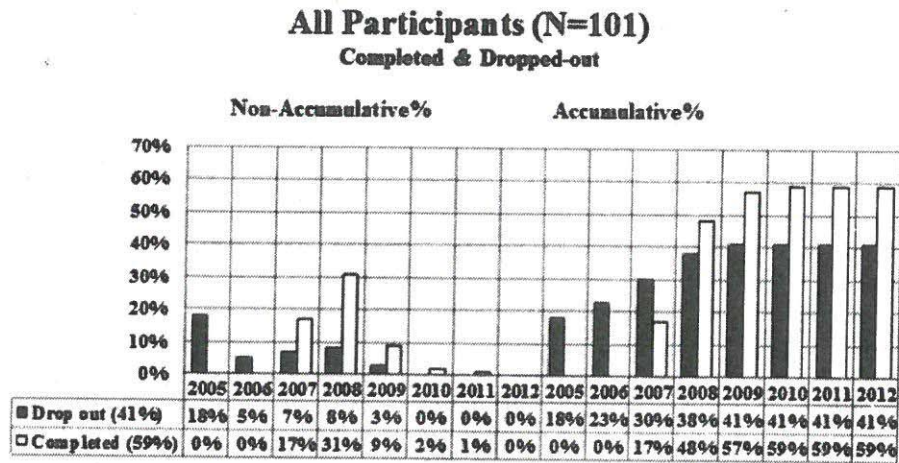


Fig.1. All participants in respective categories

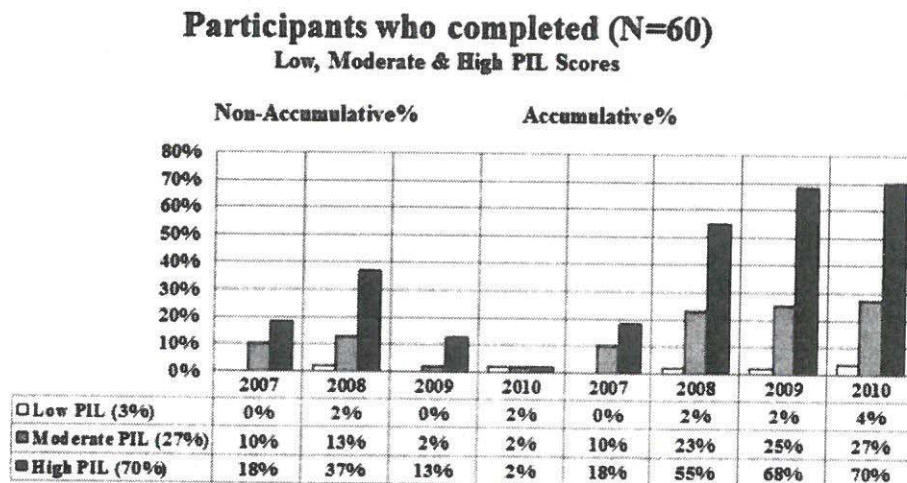


Fig. 2. All participants who completed their studies

plete their studies are from the high meaning category, while twenty-seven percent are from the moderate meaning category and three percent are from the low meaning category. The accumulative percentages presented in Figure 2 indicate that fifty-five percent of the participants who scored high on the PIL managed to complete their studies in four years, in comparison to twenty-three percent of participants from the moderate category, and two percent from the low meaning category.

The percentages of all participants who dropped out of university (N=41) are presented in Figure 3. The accumulative percentages pre-

sented in Figure 3 indicate that amongst those who dropped out of university, forty-five percent are from the low meaning category, twenty-nine percent from the moderate meaning category, and only twenty-six percent are from the high meaning category. As indicated in Figure 2, majority of the participants, in all categories, dropped out of university in the first year of study.

Figure 4 presents the percentages of all participants in the high meaning category. Overall, eighty-one percent of participants in this category managed to complete their studies, sixty-three percent completed their studies in four

### Participants who dropped-out (N=41) Low, Moderate & High PIL

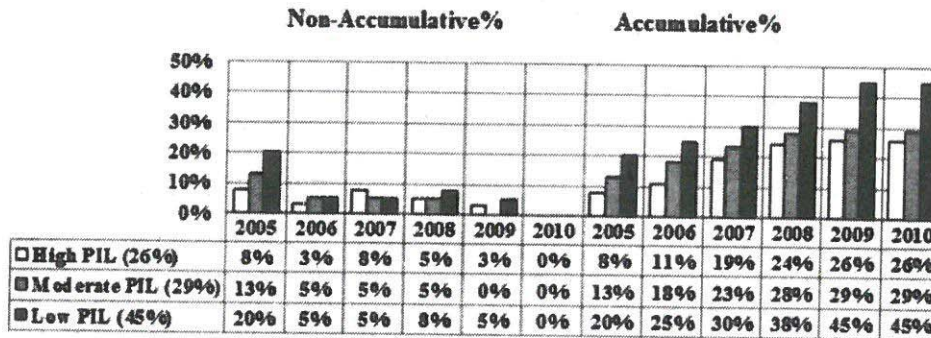


Fig. 3. All participants who dropped out of university

### High PIL Score (N=52) Completed & Dropped-out

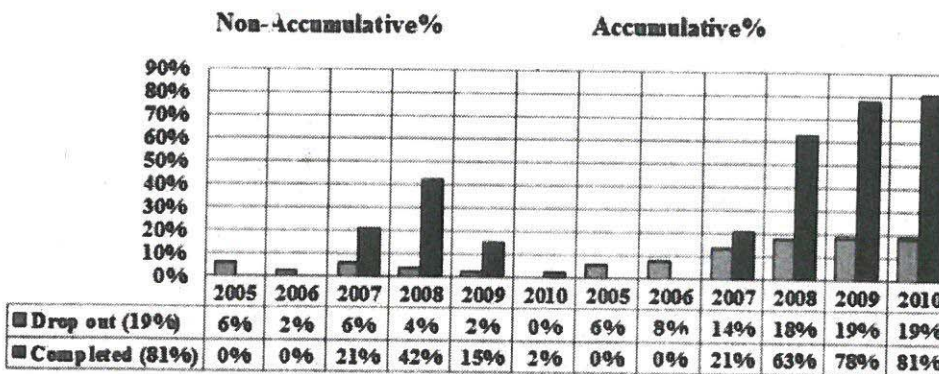


Fig. 4. All participants in the high meaning category

years, and only nineteen percent dropped out of university. Therefore, the results presented in Table 4 suggest that there seems to be a greater chance of succeeding at university amongst participants in the high meaning category.

The percentages of all participants with indecisive PIL scores are presented in Figure 5. As reported in Figure 5, fifty-five percent of participants with moderate PIL scores managed to complete their studies, while forty-five percent dropped out. As a result, there seem to be a moderate chance of succeeding at university amongst participants with indecisive PIL scores.

The percentages of students who achieved low score PIL scores are presented in Figure 6. The latter (Fig. 6) depicts that ninety percent of participants who fell in this category dropped

out of university, and only ten percent managed to complete. The accumulative percentages presented in Figure 6 indicate that forty-five percent of participants who scored low on the PIL dropped out of university in the first year of study; and only five percent managed to complete their studies in four years. As a result, the latter finding suggests that there seems to be a high possibility of dropping out of university amongst participants with a low sense on meaning.

**Inter-correlations**

Before presenting and discussing the results of the multiple regression analysis, the correlations between the predictor variables and the criterion, as well as correlations between predic-

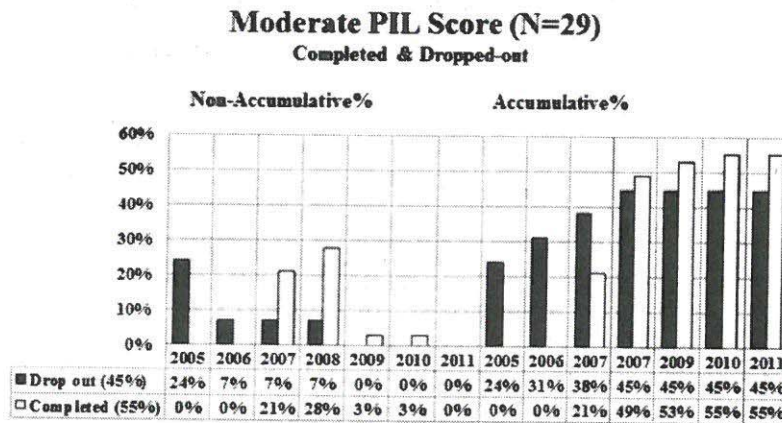


Fig.5. Participants in the moderate meaning category

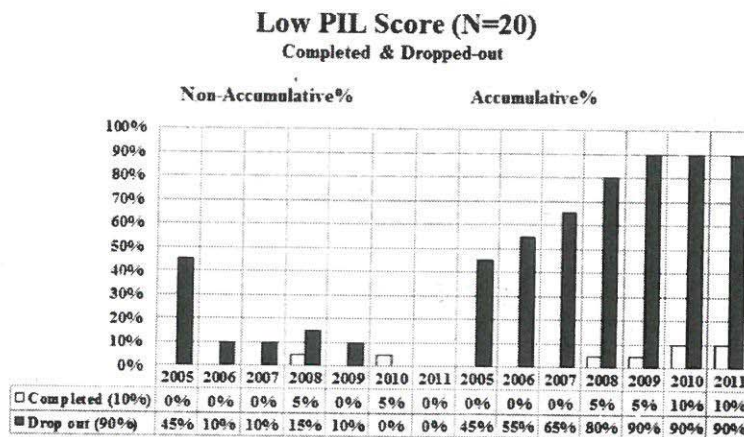


Fig. 6. Participants in the low meaning category