Influence of Human Personality in Software Engineering
A Systematic Literature Review

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Abstract: Personality of software engineering professionals has been a continuous element of interest in academic research. Researchers have applied different models of personality analysis in various software engineering areas to identify improvement points, to promote job satisfaction and to better organize teams. This paper aims to conduct a study, by means of a systematic literature review (SLR), to evaluate personality models applied in software engineering and to understand how human personality influences professional's work. Three main models, most frequently used, were identified (MBTI, BIG 5 and FFM) to evaluate software engineering professionals. There is evidence of the influence of personality on the activities performed. However, some results have suggested that the study of personality is not an easy task to be performed, because there are contradictions in findings that challenges the validity of studies.

1 INTRODUCTION

Modern society has increasingly demanded quality and productivity in all branches of industry and product development. Software Engineering is no exception. It has been recognized that excellent individuals in a software team makes a huge influence on the final products quality, and that one developer can be orders of magnitude more productive than other (Brooks, 1987) (Sudhakar et al., 2012) (Meyer et al., 2014). Therefore, it is important to know how to create effective teams that will more effectively and efficiently produce high quality software products (Richardson et al., 2012) (Yilmaz et al., 2016).

According to Pressman and Maxim (Pressman and Maxim, 2014), software is developed and used by people, and supports interaction between people, thus characteristics such as human behavior and cooperation are fundamental to their development. The concern with human aspects becomes of fundamental importance for success of a software project.

Recently, Spinellis and Androutsellis prepared an analysis of software development activities in different companies (Spinellis and Androutsellis-Theotokis, 2014). They concluded that the success of a team depends on the targets set for its members, the required controls, pre-defined standards and business rules that directly influence the work of software engineering teams.

Considering these factors, one needs to identify technical and managerial issues of each individual in order to arrange the best teams. One factor that stands out is to evaluate the relationship between human personality and the activity to be performed by each professional. According to Capretz (Capretz, 2003), human personality represents how people's behavior influences decision-making and the ability to assimilate information, generating an important debate in academia and industry.

In order to understand if human personality influences activities of software engineering professionals, this paper proposes a Systematic Literature Review (SLR) (Kitchenham, 2004) with the objectives of identifying, summarizing, and analyzing all models that have been proposed or have been used to represent influence of human personality in Software Engineering.

Results show that this topic has been researched over the past 14 years, including several recent publications, which indicates the importance of the theme of human personality in Software Engineering. An example is work presented in (Yilmaz and O'Connor,

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2012), carried out in industry and academia, with 63 developers, which showed through preliminary studies that there are more extroverts than introverts professionals in software teams. Another example is the work presented in (Ferreira, Vito and Natasha, N, 2014) which concluded that software testers have significantly higher conscientiousness factor than other software development professionals. This paper is organized as follows: Section 2 is about the method followed in the SLR, Section 3 discussed the results achieved and in Section 4 we conclude the study and indicate perspectives for future work.

2 PLAN AND EXECUTION OF THE SYSTEMATIC LITERATURE REVIEW

A SLR is conducted to catalog studies on professional personality in software engineering in order to identify relevant primary studies related to this issue. The review was carried out between June 18, 2016 and July 20, 2016. Two phases of the SLR, (A) Planning and (B) Conduction are presented in this section. First, two research questions were proposed as follows:

- **RQ1:** What psychological models are used to identify traits of personality of software engineering professionals?
- **RQ2:** Activities performed by software engineering professionals are influenced by their personality?

These research questions are answered in Section 3.

2.1 Search Strategy

This research process includes a search in sources accessed on the web, thus manual query was discarded. Most common found terms were used in publications on the topic "Human Personality Influence in Software Engineering".

Initially, we conducted the search considering a period of five years, finding 110 works. Whereas a SLR must obtain potentially relevant primary studies (Kitchenham, 2004), we consider 110 instances a low number, then we decided to extend the period for 14 years. Thus, the search was conducted between 2003 and 2016. This choice is because even though some models have been published since 1980, we have identified that relevant work about human personality in Software Engineering began to occur in 2003.

We chose to carry out the search in three scientific repositories: IEEE, both "Conference Publication" and "Journals & Magazines" sections; ACM, in sections "Proceeding", "Newsletter", "Magazine" and "Journal", and Elsevier (Subject area: Computer Science, Human-Computer / Publications, type: journals). We also use Google Scholar as a search support tool.

In order to establish the search strategy, we initially identified the main keywords "Personality" and "Software Engineering". We have also identified synonyms for these keywords. Thus, the final search string was:

(Personality OR Motivation OR Behavior OR Humans Aspects OR Satisfaction) AND (Software Engineering OR Software Development OR Programming OR Software Test OR Developer OR Tester OR ICT Manager OR Project)

2.2 SLR Conduction

Three steps were considered in this SLR: (1) Selection process and evaluation quality of primary study, (2) Inclusion and exclusion criteria, and (3) Information extraction strategy.

After applying the search string, 391 papers were found, distributed as follows: ACM (220), IEEE (141), and Elsevier (30). Each item found in the search process was analyzed by two researchers and reviewed by two others. Two researchers were responsible for searching and performing a first scan and the other two to perform a second check and initiate inclusion and exclusion process. Within this approach, the most important roles of a SLR, as quoted by Kitchenham (Kitchenham, 2004), were considered. Figure 1 illustrates the number of publications distributed by year.

2.2.1 Inclusion and Exclusion Criteria

Selection criteria are used to evaluate each study recovered from the search sources. Thus, the inclusion criteria **(I)** used to include relevant studies in our systematic review are:

- **I1** - the primary study proposes or uses models to identify human personality in Software Engineering;
- **I2** - the primary study proposes that the human personality influences activities of software engineering professionals.

Alternatively, the exclusion criteria **(E)** used to exclude studies that do not contribute to answering the research questions are:

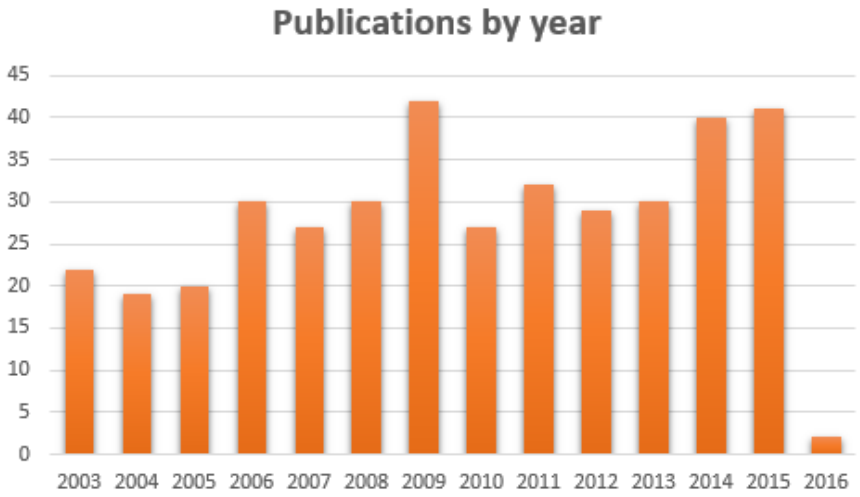

Figure 1: Number of publications by year.

- **E1** - the primary study does not address human personality in Software Engineering;
- **E2** - the primary study does not propose or does not use models for identifying human personality;
- **E3** - the primary study does not present an abstract or its full text is not available;
- **E4** - the primary study is written in a different language than English;
- **E5** - the primary study consists of a compilation of works, for instance, from a conference or workshop.

After the adoption of the inclusion criteria, 122 works were selected as follows: ACM (61), IEEE (48) and Elsevier (13). The next step was to read the abstracts of 122 papers selected in the previous step. The researchers, in consensus, selected 53 papers as follows: ACM (29), IEEE (21), and Elsevier (3). Thereafter, we applied the exclusion criteria, which resulted in 21 papers, distributed as follows: ACM (9), IEEE (9), and Elsevier (3). Table 1 illustrates the steps for final paper selection.

Figure 3 shows the number of publications by country. Note that the U.S. has the highest number of publications in searched period, followed by New Zealand with 3 and Pakistan with 2.

Table 1: Selection Steps.

Steps	**Repositories**			**T**
	AC	**IE**	**EL**	
After search string (2003-2016)	220	141	30	391
After inclusion criteria	61	48	13	122
After reading the abstracts	29	21	3	53
After exclusion criteria	9	9	3	21

AC=ACM; IE=IEEE; EL=Elsevier; T=Total

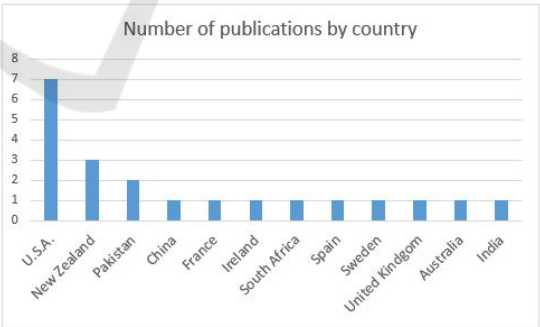

Figure 2: Number of publications by country.

2.2.2 Information Extraction Strategy

For each selected study, the process of assessing the quality of primary studies was executed, and the following data were extracted: date of execution of study; description treatment of observed risks; description of performed study; experimental study project; threats to validity: internal, external, construction, conclusion; results of the study; lessons learned; future perspectives; additional comments.

After analysis, the authors of this paper came to consensus on what would be selected and defined the final list of twenty one papers that are presented in Table 2.

Table 2: Included Primary Studies.

ID	Author	Year	Venue
01	(Capretz, 2003)	2003	International Journal of Human-Computer Studies
02	(Gorla and Lam, 2004)	2004	Communications of the ACM
03	(Darcy and Ma, 2005)	2005	Annual Hawaii International Conference on System Sciences
04	(Peslak, 2006)	2006	ACM SIGMIS CPR Conference on Computer Personnel Research:
05	(Chao and Atli, 2006)	2006	Agile Conference
06	(Aronson et al., 2006)	2006	Journal of Engineering and Technology Management
07	(Rutherfoord, 2006)	2006	Conference on Information Technology Education
08	(Mourmant and Gallivan, 2007)	2007	ACM SIGMIS CPR Conference on Computer Personnel Research
09	(Gomez and Acuna, 2007)	2007	International Conference on Software Engineering & Knowledge Engineering
10	(Feldt et al., 2008)	2008	International Workshop on Cooperative and Human Aspects of Software Engineering
11	(Salleh et al., 2009)	2009	International Symposium on Empirical Software Engineering and Measurement
12	(Shoaib et al., 2009)	2009	International Multitopic Conference
13	(Salleh et al., 2010)	2010	ACM/IEEE International Conference on Software Engineering
14	(Hannay et al., 2010)	2010	IEEE Transactions on Software Engineering
15	(Salleh et al., 2011)	2011	IEEE-CS Conference on Software Engineering Education and Training
16	(Raza, A and Capretz, L F, 2012)	2012	Journal of Software Engineering
17	(Yilmaz and O'Connor, 2012)	2013	EUROMICRO Conference on Software Engineering and Advanced Applications
18	(Ferreira, Vito and Natasha, N, 2014)	2014	International Conference on Computer Science & Education
19	(Kanij et al., 2015)	2015	International Workshop on Cooperative and Human Aspects of Software Engineering
20	(Gulati et al., 2016)	2016	ACM SIGSOFT Software Engineering
21	(Smith et al., 2016)	2016	Int. Workshop on Coop. and Human Aspects of Soft. Eng. (CHASE)

3 ANALYSIS OF RESULTS

Before discussing the results, it is of utmost importance to understand that personality encompasses non-intellectual, psychological characteristics that are informative about an individual, and that helps to describe the differences between people. It is also thought to be organized, relatively enduring, an influence on the person's interactions with others and influences their adaptation to their social environment. Criteria by which people differ from each other are called psychological traits. Traits are representative factors to predict one's behaviour patterns, feeling, thinking and related activities (Kanij et al., 2015).

There are several conclusions that can be drawn from these findings that seem worthwhile for further discussion.

This SLR identified MBTI as the most popular model to analyze software developer personalities. However, studies differ on the use of experimental projects (Yilmaz and O'Connor, 2012). In addition, research on the software developer's personality should distinguish more carefully between models Big 5 and FFM, as they differ in certain characteristics (McCrae and John, 1998) (Zillig et al., 2002).

However, there are limitations that have to be taken into consideration. First, one should consider that this revision may have lost some relevant work, moreover, the quality of the studies used in this analysis were not homogeneous. Another factor that should be taken into consideration is that issues such as methodologies used in the studies, sample size and use of statistical methods were not taken into account in the analysis. In case the work had a psychological model applied to Software Engineering, it was enough for this research. This behavior may limit the

conclusions drawn from the reported results.

3.1 RQ1: What Psychological Models are Used to Identify Traits of Personality of Software Engineering Professionals?

In response to RQ1, the twenty-one selected articles were read, and by consensus the researchers found that during the period under study 3 psychological models are considered essentials to assessing the personality of software engineering professionals. Another 3 models were used only once in the researched period 5.

3.1.1 MBTI - Myers-Briggs Type Indicator

The MBTI model is the most applied one to identify software developers and is based on the model of Carl Jung (Myers et al., 1985) (Myers et al., 1998). MBTI divides human personality into three dimensions: how do people relate to the world; the way information is known and; the way information is processed.

The MBTI is a personal characteristics identification tool, which enables identifying the characteristics, strengths and aspects of development. Thus, the model identifies four pairs of preferences known as dichotomies (Myers et al., 1985) (Myers et al., 1998), briefly explained as follows.

Dichotomy Attitude (E-I): (I) Introversion: tend to be involved with ideas. Prefer to think before acting. Need time to think and recover energy. In general, they are not very sociable; (E) Extroversion: tend to act. Enjoy performing various activities. Act first and think later. When inactive, their energy decreases. They are generally sociable.

Dichotomy Functions (S-N and T-F): (S) Sensing: they rely more on tangible things, concrete, sensory information. They prefer details and facts. For them the meaning is in data. They need a lot of information; (N) Intuition: they prefer abstract and theoretical information, which can be associated with other information. They like to interpret data based on prior knowledge. They work well with incomplete and deductible information; (T) Thinking: they take decisions based on logic and look for rational arguments; (F) Feeling: they take decisions based on their feelings rather than emotions.

Dichotomy Lifestyle (J-P): (J) Judging: they feel calm when decisions are taken; (P) Perceiving: they feel tranquil when leaves open decisions.

Combination of these 4 pairs can result in 16 different personalities. Personality type is made up of four letters. First letter represents the attitude dichotomy ((I) Introversion or (E) Extroversion), the second and third letters represent functions dichotomy ((S) Sensory or (I) Intuitive - (T) Thinking or (F) Feeling) and the fourth letter is the Lifestyle dichotomy ((J) Judging or (P) Perceiving) (Myers et al., 1998), as depicted in Fig. 3.

ISTJ	**ISFJ**	**INFJ**	**INTJ**
factual	detailed	commited	independent
practical	traditional	creative	visionary
organized	service-minded	determined	original
steadfast	devoted	idealistic	global
ISTP	**ISFP**	**INFP**	**INTP**
logical	caring	compassionate	independent
realistic	adaptable	original	theoretical
adventurous	gentle	creative	analytical
self-determined	harmonious	empathetic	reserved
ESTP	**ESFP**	**ENFP**	**ENTP**
activity-oriented	enthusiastic	creative	enterprising
versatile	friendly	versatile	outspoken
pragmatic	cooperative	perceptive	challenging
outgoing	tolerant	imaginative	resourceful
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**
logical	thorough	loyal	logical
systematic	responsible	verbal	strategic
organized	detailed	energetic	fair
conscientious	traditional	congenial	straightfoward

Figure 3: MBTI Personality Types.

In theory, each of sixteen different kinds of personality measured by MBTI can be seen as a set of patterns that indicates how the individual behaves (Ferreira, Paula G and Silva, F, 2008).

3.1.2 BIG 5 Personality Dimensions

Another important model to evaluate personality is the Big Five Personality Dimensions (Big 5) (Goldberg, 1990).

The Big Five model was originally created in the 1970s by two independent research teams - Paul Costa and Robert McCrae (at the National Institutes of Health) and Warren Norman (at the University of Michigan) / Lewis Goldberg (At the University of Oregon) (Norman, 1967) - who have followed different paths to achieve the same results, meaning that most human personality traits can be reduced to five large dimensions regardless of language or culture.

In order to identify the five dimensions, the researchers conducted interviews with hundreds of questions to thousands of people and then analyzed data using a statistical procedure known as factorial analysis, which is used to reduce a large amount of information to a synthetic and relevant set (McCrae and John, 1998) (Norman, 1967).

The Big 5 consists of five personality traits that are universal to the human population: (i) Insurgency:

refers to the orientation of an individual in relation to others. Individuals with insurgency traits tend to be talkative, bold, assertive and sociable; (ii) Agreeableness: refers to the sympathy and social interaction of a person. They are nice guys, get along well with others, they are reliable and useful; (iii) Conscientiousness: refers to the organization. Conscientious individuals are suitable for hard working; they are organized and able to complete tasks in the proposed time; (iv) Neuroticism: Refers to stress, anxiety, fear, and the volatility of a person. Individuals with this trait tend to not let emotion interfere with their work; (v) Openness to experience: Refers to imagination, curiosity and wit of an individual. Individuals with this trait tend to be curious, open-minded and arts connoisseur (Goldberg, 1990).

Those features are understood as a complete description of the persona, are stable over a period of ten years and may vary among cultures (Goldberg, 1990).

3.1.3 FFM - Five Factor Model

FFM is a variation of the Big 5 model. If on one hand the descriptions of the five characteristics are similar to those of Big 5, on the other hand these two models differ in terms of the theoretical basis, of causality and measurement. While Big 5 assumes that personality traits are important for social interaction, FFM provides a comprehensive model of causes and contexts. FFM assumes, in a bio-social context, the influence of genetic and environmental causality. Big 5 model comprises a circular measurement model in contrast to the FFM which is based on hierarchical measurements (McCrae and John, 1998). The five factors FFM are: (i) Extroversion: refers to a person involved with the outside world. Extroverts feel comfortable in social relations, are enthusiastic, friendly and active; (ii) Agreeableness: refers to co-operation ability of an individual; (iii) Conscientiousness: refers to how individuals manage, regulate and direct their impulses; (iv) Neuroticism: refers to how an individual experiences negative feelings. Those who have low neuroticism are emotionally stable, calm, confident and secure; (v) Openness to experience: refers to an individual's imaginative and creative traits (McCrae and John, 1998)(Salleh et al., 2009).

These three models were used in the period surveyed to assess personality of software developers, software testers, students and teachers by means of surveys and experiments. A relationship between the selected works and the theoretical models is presented in Table 3. For the sake of data comprehension, we used the IDs defined in Table 2.

3.1.4 Additional Models

Other less relevant models, such as Job Diagnostic Survey (JDS) were found that measure how work impacts people's lives in an organization or society in general (Morris and Venkatesh, 2010).

The Personal Style Inventory (PSI) consists of 8 traits, including 5 Big 5 models, plus Assertiveness, Image Management, Optimism, Tough Mindedness, Work Drive and Customer Service Orientation (Lounsbury et al., 2003). This study found that these characteristics significantly affect job satisfaction.

Temperament Classification Keirsey (KTS) is a self-rated personality test designed to help people understand themselves and others. It is closely associated with the Myers-Briggs Indicator (MBTI) type. However, the difference is that MBTI is concerned about the thinking and feelings of people while KTS is concerned about their obvious behaviors. In the classification of personality types, the MBTI focuses on contrasting extraversion and introversion, while KTS emphasizes the sensation / intuition perspective (Salleh et al., 2014).

3.2 RQ2: Are Activities Performed by Software Engineering Professionals Influenced by Their Personality?

On RQ2, identified through reading selected articles, some points are raised by authors and leverage the discussion on the topic.

According to works presented in (Mourmant and Gallivan, 2007), (Ferreira, Vito and Natasha, N, 2014) and (Kanij et al., 2015), constant technological change, new methodological paradigms, outsourcing services and distribution of work teams, challenges to understand personalities of software developers, Open source development, evolution of tasks complexity, globalization, new business models, and constantly changing activities have also their share of contribution.

Some researchers have found that software developers with independent tasks that require a certain degree of creativity tend to be introverts (Capretz, 2003) (Darcy and Ma, 2005), while developers who perform tasks that require collaboration and leadership tend to be extroverts (Salleh et al., 2009).

On the other hand, there are inconsistencies between the results as reported in (Feldt et al., 2008) to identify that there is shortage validity in personality-software associations, and (Gorla and Lam, 2004) when describing that lack guidance for the IT department regarding the selection of personnel. In other words, the personality often interferes on the software

Table 3: Overview of Studies.

MODEL	ID	METHODS/PARTICIPANTS	LOCAL
MBTI	01	Survey / 100 developers and students	U.S.A.
	02	Survey with 92 students	China
	04	Experiment with 55 students	U.S.A.
	07	Experiment with 22 students	U.S.A.
	08	Experiment with 1.471 students	France
	12	Experiment with 71 students	Pakistan
	16	Survey with 52 developers and 18 instructors	Pakistan
	17	Experiment with 63 developers	Ireland
	18	Survey (not portrayed)	South Africa
BIG 5	03	Experiment with 29 students	U.S.A.
	05	Experiment with 60 developers and 68 students	U.S.A.
	09	Experiment with 105 students	Spain
	10	Survey with 47 developers	Sweden
	14	Experiment with 196 developers	United Kingdom
	15	Experiment with 137 students	New Zealand
	19	Survey with 200 developers	Australia
	20	Survey with 66 students	India
	21	Survey with 797 professionals	U.S.A.
FFM	06	Survey with 143 developers	U.S.A.
	11	Experiment with 54 students	New Zealand
	13	Experiment with 453 students	New Zealand

development simply because the developer was not analyzed properly at the time of hiring. Some authors say that while personality affects job satisfaction, its influence on software development still remains unclear (Mourmant and Gallivan, 2007) (Salleh et al., 2011).

The MBTI model was applied to individuals (Capretz, 2003), to groups (Peslak, 2006), to students (Rutherfoord, 2006), to professional software developers' (Gorla and Lam, 2004) and software quality (Barroso et al., 2016) . Most of the analyzed studies compared the effect of developers personality in relation to job satisfaction, individual forms of work and teamwork.

The effect of personality traits of students assessed with MBTI, as well as their effectiveness at exploratory testing is discussed in (Shoaib et al., 2009). The authors concluded that extrovert personality traits are positively correlated with effective exploratory testing. Exploratory testing is a specialized testing technique. Thus, based on the findings of this study, while it can be predicted that extraverts can be good exploratory testers, whether extraverts will be good testers in general remains an open question.

There is also research performed on analysing the personality traits of software engineers in general. Authors of paper (Hannay et al., 2010) analysed five research studies conducted from 1985 to 2010 using MBTI to determine the personality types of software engineers. Combined results indicate thinking and judging type assessed with MBTI were over-represented among software engineers. A systematic literature review on personality research with software engineers published in (Feldt et al., 2008) found the majority of personality research examined pair programming and team effectiveness, and MBTI was used in most of the research.

Two studies compared personality types between industry and academy (Raza, A and Capretz, L F, 2012) (Yilmaz and O'Connor, 2012) and concluded that the most common types of personalities are INTJ, ISTJ, ESTP and ESTJ (Fig. 2).

Studies such as (Gorla and Lam, 2004) and (Mourmant and Gallivan, 2007) identified the ISTJ type as the most common among software developers. The Big 5 model, which has gained prominence in software engineering research in recent years, the model has been applied to individuals and teams (Gomez and Acuna, 2007). Researchers use the Big 5 model to analyze cooperation between software developers and to examine pair programming (Chao and Atli, 2006) (Hannay et al., 2010) (Salleh et al., 2011). These studies, however, showed contradictory influence of personality in relation to performance, while study (Salleh et al., 2011) claim that certain personality traits, such as satisfaction, significantly affect the developer's performance. In addition, studies (Chao and Atli, 2006) and (Hannay et al., 2010) found no correlation that, statistically, provided evidence of the influence.

Study (Smith et al., 2016) performed a survey about the beliefs, practices, and personalities of soft-

ware engineers in a large software company, with 797 professionals. They found no significant personality differences between developers and testers. Managers tend to be more aware and extroverted.

Authors of paper (Gulati et al., 2016) studied the relationship between students performance in Software Engineering and their personality. They have also found no positive evidences. FFM model has been applied in Software Engineering research, for individuals and teams (Salleh et al., 2009) (Salleh et al., 2010). Topics ranged from the development of new products as reported in (Aronson et al., 2006) and to identify the dependencies between programming methods, as reported in (Salleh et al., 2009). A set of experiences related to students were executed in different dimensions of model proposed in (Salleh et al., 2009) (Salleh et al., 2010) and (Salleh et al., 2011). In this case, neither the conscientiousness nor the neuroticism affects academic students.

As it was observed, studies using the FFM model were performed in an academic environment, and found no significant effects of personality on the performance of performed activities (Darcy and Ma, 2005) (Salleh et al., 2009) (Salleh et al., 2010) (Salleh et al., 2011), while industry studies identified significant influences of personality.

4 THREATS TO VALIDITY

This section describes concerns that must be improved in future replications of this study. To organize this section, the threats to validity were classified using the Internal, External and Construct (Wohlin et al., 2012).

Construct Validity: The main constructs in this review are the two basic concepts "Personality" and "Software engineering".

For the first concept, we use term "Personality or Motivation or Behavior or Humans Aspects or Satisfaction" to make sure that all selected papers are related to term searched.

For the second concept, the terms "Software Engineering, Software Development, Programming, Software Test, Developer, Tester, ICT Manager, Project" are used to ensure high coverage of potentially relevant papers on the influence to software engineering activities from database search.

A complementary manual search was discard due to the fact there are not conferences and journals specifically focused on the joint use of these concepts. This threat is partially mitigated by including the general intervention term "personality" along with "Software engineering" in the terms for the search in three reputable databases.

Internal Validity: Some subjective decisions may have occurred during selection and data extraction. Some papers did not provide a clear description or proper objectives and results, making difficult the objective application of the inclusion and exclusion criteria. To minimize selection and extraction systematic mistakes, the processes was performed by four reviewers, and any conflicts were discussed and resolved by all the authors.

External Validity: The search process described in Section 2.1 was defined after several trial searches and validated with the consensus of all authors. We tested the coverage and representativeness of retrieved studies, including automatic database search and referral scanning.

5 CONCLUSION AND FUTURE WORKS

This paper helps to synthesize available evidence in the literature on the study of the influence of human personality in software engineering and can help academia and industry in their daily work. We have found that there are at least three theoretical psychological models to identify human personality that, over the past fifteen years, have been applied to studies that analyze human personality of students, developers and instructors of Software Engineering.

Currently, based on results provided by this SLR study, a controlled experiment has been performed with students in order to assess the influence of human personality in software developed by them. The idea is to identify if the human personality influences quality of software. The MBTI and Big Five models found in this SLR have been used in order to assess the psychological profile, and to assess the quality of software products using object-oriented metrics.

Upcoming works can search other repositories, and other keywords could be added to the search string. Moreover, it is worth highlighting that SLR conduction is not a trivial task because of the amount of papers that must be read. Besides that, relevant primary studies written in languages other than English were disregarded in this research.

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