

Personality types and dreaming in future health professionals: Effect of age and gender

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Summary. This research is aimed at highlighting the existing relations among variables related to dreams and personality. The theoretical frame is linked to the analytic psychology by C. G. Jung and in particular to the Psychological Types. In order to study the variables related to dreams, the Mannheim Dream Questionnaire in its Italian Adaptation was adopted. The observation group was composed of 287 subjects aged from 18 to 27 years old with female prevalence, completing study courses related to health professions. In order to assess the personality variables, the Myers Briggs Type Indicator Form F was used with reference to extraversion and introversion attitudes and psychological functions, such as thought, feeling, sensation and intuition. All dream variables of the MADRE Questionnaire were considered. The first hypothesis of the study was related to the relationships among attitudes and dreams variables. Significant correlations emerged with reference to telling dreams, overall emotional tone, creative dreams, problem solving dreams, reading about dreams helpful literature, positive for extraversion and negative for introversion. The second hypothesis was related to the links among psychological functions and dream variables. Several significant correlations emerged, always in line with the polar dimension of the complementary variables. The third hypothesis analysed the dependencies between fundamental variables such as age and gender of our future clinicians and dream factors. Significant dependencies emerged, so that the role of age and gender were highlighted with reference to the particular MADRE dream variables. According to the emerged data it was possible to highlight the importance of studying future health professionals' object relations.

Keywords: Personality types, Jung, Clinical Psychology, Dreams, Adolescence, Analytical Psychology

1. Introduction

Among the various factors that influence dreaming in subjects, there are some of particular interest that have aroused interest. The age of the subjects is considered a particularly interesting factor, since aging is known to limit dream recall (Schredl, & Göritz, 2015). In a study published in 2015, Schredl and Göritz considered the main changes in subjects' dream activity over a three-year period. The study highlighted changes related to dream recall, nightmare and lucid dream frequency. Despite a general stability in the decline of dream recall and other related functions, the reasons behind this decline are not yet fully ascertained. Through the studies of Herman and Shows (1984), it has been possible to observe how different age groups pres-

ent different phenomena regarding the effect of age on the dream. Waterman in 1991, highlighted how compared to the age groups, the dream recall underwent a decrease, so that all young subjects were able to recall five dreams, only 73% of the middle-aged subjects managed to obtain similar results while instead only 65% of the elderly subjects could recall up to 5 dreams.

The authors therefore suggested some reasons due to the duration of the REM phases, which ranges stable from 25 to 33 minutes in 29-year-old male and 49 years old female subjects. The decline was observed in the decrease of REM sleep periods, so that the duration of 22-24 minutes was representative of periods of 20% of REM sleep in middle-aged subjects and of 16% in elderly subjects (e.g., Miles & Dement, 1980).

The study of Schredl, & Göritz (2015), reported works representative of the issue of aging with respect to dreaming. Specifically, the works considered were those of Giambra, Jung, & Grodsky (1996), and Schredl (2008; 2009b), which clarify that although it is shown that dream recall and the frequencies of dream phenomena decrease with age, they are missing longitudinal studies that could answer questions about the reasons of the decrease in dream recall. The authors suggested a single study that considered a 6-year period (Giambra, Jung, & Grodsky, 1996), which reported a

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significant decrease for women, but not for men. The fact that it was noticed an increase in dream recall in adolescence and a decrease along adulthood, was confirmed by Schredl (2009a). Regarding disturbing dreamlike activities, as in the case of nightmares, some studies have shown that age has no relation to their decrease. In other studies, however, it has emerged that there is an increase similar to dream recall (Salvio, Wood, Schwartz, & Eichling, 1992; Schredl, 2013; Schredl, 2010).

The decrease in lucid dreaming referable to aging was reported by Schredl and Göritz (2015), as attributable to the general decrease in dream recall. The above-mentioned study was published by Schredl, & Erlacher (2011), so that the significant results referred to the aforementioned decrease corresponding to aging. Regarding the 2015 study, it was possible to observe a general decrease, even if the authors suggested the need to take into account the attitudes towards dreams, since they could be detected as influential.

As suggested by Schredl, Brenner and Faul (2002), attitudes towards dreams appears as a stable and measurable variable, although it showed high correlations with personality, which must certainly be deepened. In 2019, Schredl and Bulkeley, showed that 24% of the population examined, shared dreams at least once a week. Age and gender appeared as relevant factors in the dynamics, together with attitudes towards dreams. This also occurs starting from the differentiations between childhood and adolescence (Georgi, Schredl, Henley, & Blagrove, 2012).

About gender, Mangiaruga et al. (2018) reported dream recall and other dream variables, as strongly influenced by the differences in orientation with respect to dream (as for attitudes towards dreams) and personality (Nielsen, 2012; Schredl & Göritz, 2015; Georgy et al., 2012; Settineri, Frisone, Alibrandi, Merlo, 2019). In the Italian adaptation work of the MADRE questionnaire, Settineri, Frisone, Alibrandi and Merlo (2019) found that the effect of gender was in negative and significant dependence relationships with Dream recall frequency, Emotional intensity, Nightmare frequency (current), Nightmare distress, Percentage of recurring nightmares. The positive relationship emerged, referred instead to Percentage of recurring nightmares. Comparing the Italian, French, English and German versions, the effect of the gender proved to be oriented towards dream recall frequency, emotional intensity, nightmare frequency (current), nightmare frequency (childhood), nightmare distress and percentage of recurring nightmares. Most of the significant relations were in line with the original version (Schredl et al., 2014).

As it is known, continuity in dream studies is necessary (Schredl, 2012), for this reason our contribution aims to understand how the dream dynamics refer to the personality attitudes and functions. The fundamental phenomenon of dream recall can be considered as the pivot point, without which the dynamics would remain unknown to the subjects. This phenomenon met a substantial interest in literature, starting from the studies of Cory et al. (1975) and other researchers (Bloxxham, 2018; Cernovsky, 1984; Montanero, 2018; Schredl, 2007; Schredl, Brennecke, & Reinhard, 2013; Solomonova, Stenstrom, Paquette, & Nielsen, 2015; Tribi et al., 2018) who dealt with the various dynamics, such as motivational, neuroscientific and the implementation of the dream recall possibilities.

In detail, Corey et al. (1975) considered two groups of

subjects, recaller and non recaller respectively. The analyses carried out considered contributions present in the literature, which examined the role of variables referable to memory and personality. The studies in question referred to Goodenough, Shapiro, Holden, & Steinscriber (1959), Hartmann (1967), Schonbar (1959) and Tart (1962). The not entirely conclusive results of these works pushed Corey into the analyses carried out, which showed greater significance related to memory. The methodology referred to Byrne's repression-sensitization theory (1961).

Bloxxham (2018) reports mixed results regarding the relationships between personality and dream recall frequency, so authors such as Hill (1974) and Tart (1962) identified significant differences in personality, although they had considered a few variables known at the time. The author reports recent results regarding the relationships between personalities and dream variables (more recent), considering positive attitudes towards dreams as a predictor of the dream recall frequency (Blagrove & Akehurst, 2000; Schredl, 2005).

With regard to the specific factors, which will then be included in the Madre Questionnaire, it is possible to make a history of the progress of the work of Schredl and colleagues in order to obtain an overview of the progress of the role of the personality. In 1996, Schredl, Nürnberg and Weiler published a work on Personality and Individual Differences which specifically indicates the results obtained regarding dream recall, attitude toward dreams, and personality. The study clarifies a strong influence of sex on the relationships between dream recall and personality. Research carried out using Schneewind's 16 FP, Schroder and Cattell (1983), showed a greater propensity of female subjects towards dreams, while males with positive attitudes towards dreams were more stable, enthusiastic and natural in personality terms. Subsequently Schredl and Schawinski (2010), regarding personality implications on phenomena such as dreams recall frequency, gender, and emotional intensity of the dream, highlighted that about the 14.5% of the dreams were shared and that dream recall frequency, nightmare frequency, attitude toward dreams, gender, extroversion, and thin boundaries were significantly associated independently with the frequency of dream sharing. The personality dimensions were assessed using the German version of the NEO-PI-R (Ostendorf & Angleitner, 1994). According to Schredl, Kim, Labudek, Schädler and Göritz, (2015), factors close to socialization are significantly connected to dream sharing. In this regard, it should be noted that only the study by Schredl and Schawinski (2010) has clarified the link between personality, therefore extroversion and the increase in dream sharing.

It is essential to clarify how methodological differences strongly influence the trend of results. It is therefore necessary to begin to analyze the perspectives that bring the empirical study of the dream closer to the categories referable to an analytical approach.

Addressing a dynamic point of view regarding the differences in the dream recall, Blagrove (2007) analysed the links with personality. The commitment of the author was to discuss about previous research on dream production, dream contents and the related personality issues. The author made it clear that among the first studies on the mental factors affecting dreams, the role of the defence mechanism of repression (Freud, 1900-1953) was of considerable importance. In particular, the role of censorship on the disturbing dream contents and the following exclusion from conscious-

ness. It results important to distinguish two different faces of turning away contents and emotions from consciousness (Settineri et al., 2019b), as in the case of repression and suppression. The clarification is due to the conscious nature of suppression, due to the need to remove contents with a responsive effort. Different links were reported by several authors, in order to highlight the adaptive possibility offered by this effort: "When used effectively suppression is analogous to a well-trimmed sail" (Vaillant, 2000, p.94).

The above-mentioned Williamson, Heckel and Bobbitt (1970), found that sensitizer individuals showed greater dream recall than repressors. This fact highlighted the defensive role of repression, so that the reason why the contents were moved away persisted. A next step towards was referred to interdependence and dependence factors, where the greater ability to detect stimuli from large contexts corresponded to a more efficient dream recall. This assumption refers to Schonbar's studies (1965). Similarly, the subjects closer to lucid dream proved to be FID (field-interdependent). Other contributions of fundamental importance were related to memory (Cory, Ormiston, Simmel & Dainof, 1975), Imagery Salience (Cohen, 1974) and to Creativity with Bone and Corlet (1968) who linked the DRF (Dream Recall Frequency) with results obtained through creativity tests.

In line with Creativity studies, Giesbrecht and Marckelbach (2006) described Fantasy Proneness as the propensity to be close to daydreaming and fantasy. The following studies clarified the propensities of the subjects involved in this dynamic, with components well proposed within the MADRE Questionnaire, such as the nightmares (Levin & Fireman, 2001, 2002) and DRF (Levin and Young, 2001, 2002). In particular, the issue of creativity plays a fundamental role. The continuity between the previous issues mentioned above and current research indicates that there are close links among personality correlates and creativity. In the article called "Dreams stimulate waking-life creativity and problem solving", Klepel, Schredl, & Göritz (2019) clearly stated how subjects with higher scores in Openness to Experience and Neuroticism, were influenced by their dreams during waking life. Creativity and problem solving represent two relevant factors, to the point that they have been included and studied as their own variables in the Madre Questionnaire. The relevance and influence of dreams on waking life is such that some authors have considered the analysis of long dream possible (Schredl & Göritz, 2019b). Further evidence suggested by Blagrove referred to Attitude Towards Dreams, a fundamental variable in the questionnaire proposed by Schredl et al (2004), Hypnotic Suggestibility and Openness to Experience.

The issue of nightmares represents an important factor regarding dream life. Many of the dream experiences remembered by the subjects often have to do with the emotional tones related to nightmares, the nightmare frequency and the ages of experimentation of the first experiences. In socio-demographic and personality terms, a correlation was observed between the frequency of nightmares and personality factors such as neuroticism (Schredl & Goeritz, 2019a). What emerges from the practice of clinical psychology is configured as congruent to these data. Furthermore, in neurocognitive terms, the authors reporting these data expressed support for the Levin and Nielsen model (2007).

What reported, wants to make it clear that what now is possible to highlight with modern instruments, has a direct link with those aspects of the personality that we are tak-

ing into account. This comparison appears fundamental to suggest the basis of the actual investigations. Blagrove's study takes into consideration the personality factors that aroused interest in reference to the dream and the influence of psychopathology. Anxious conditions, personality disorders, dissociation, schizophrenia and alexithymia were considered. This contribution appears central to us, in order to put in place a possible continuity with the following hypotheses.

The author aimed at proposing a fundamental question: "Do the individual difference variables act at dream recall and production?" (P.136) This question was followed by a series of evidences, which highlighted how individual variables interfere on the dream production, referring to REM and NREM phases (Stickgold, Malia, Fosse, Propper & Hobson, 2001). The fundamental implication refers to Personality and Dream Contents, in our case highlights the possibility of comparison between psychometrically oriented measures. Our interest therefore refers to the properties expressed by subjects and attitudes towards dreams, with a particular curiosity for the continuity between sleep and waking life (Skancke, Holsen, & Schredl, 2014). The interest of clinical psychology regarding the dream should take into account all the possibilities related to the encounter with the different types of patients (Conversano, 2019; Merlo, 2019b; Martino, Langher, Cazzato, & Vicario, 2019; Settineri, Frisone, Alibrandi, & Merlo, 2019a). Specifically, the conditions mentioned are compared with the personality aspects occurring in the responses to treatments and the adherence to treatments (Settineri, Frisone, Merlo, Geraci, & Martino, 2019). As reported by Schredl & Schawinski (2010) the dream represents an intimate private experience. The dynamics through which sharing dreams could take place or not, were manifold. From our point of view, the scientific investigation of the dream requires in addition to dream recall, a communication of dreams. Dream recall and sharing dreams therefore represent two fundamental variables. This last clarification is due not only to scientific needs, but also because there are several variables that affect the communication of dream contents. As a general rule, the fact that extroverted subjects can have more ease in communicating and sharing dreams, was confirmed old and recent studies (König, Mathes, & Schredl, 2016; Samson & De Koninck, 1986). The reference is not casual, since Schredl and Schawinski reported the need to implement studies about intervener variables. The interest in continuing with this research line is represented, for example, by studies that help isolate the variables that have to do with sharing, with recall and with personality variables in adults and adolescents (Lambrech, Schredl, Henley-Einion, & Blagrove, 2013).

Among the most interesting dynamics related to dream, the lucid dream represents a phenomenon that has attracted the attention of researchers in its relationships with personality. In a recent study, Hess, Schredl & Goritz (2017) found that some personality phenomena correlated with dynamics related to lucid dreaming. In particular, openness to experience correlated positively with lucid dream frequency and negatively with agreeableness. According to Furnham, Moutafi, & Crump (2003), it is possible to compare some of the Big Five factors with those of MBTI. In particular, extroversion correlated with extraversion, openness with intuition, agreeableness with feeling and conscientiousness with judging function. New investigations between the latest approaches of dynamic psychology and personality

(Bishop, Grubb, & Acuff, 2017; Cann, Douglas & Donderi, 1986; Khalil, 2017) showed significant relationships between dreams and personality (Hawkins, Raymond, & Boyd, 2017). The aim of this last research was to explore the personality correlates and linguistic expressions of dreams. The analyzes of distinction between the expressions used by the subjects during the dream and waking life, the correlates of personality and gender represented prominent values of the research. Gender was identified as a significant predictor, along with openness to new experiences. The analyzes carried out referred to linguistic expressions, considering items such as pronouns, terms in use and obsolete words. Specifically, for example, the female gender was related to the use of familiar and friendly words, and openness to new experiences with past verbs and the pronoun “you”, while openness to experiences. Despite interesting results, the authors suggest that greater attention to these phenomena should produce an increase in research. An implementation of the results and methodologies would be useful to justify the results in a univocal way.

As suggested by Khalil (2017), the organization of personality is a dynamic fact, which takes into account those psychophysical systems useful for the adaptation of the subject to the environment (Barrik & Ryan, 2003).

Jungian conceptualization, in relation to other personality models (Bidjerano & Yun Dai, 2017; Eysenck, 1961) in experimental terms showed similar structures.

With regard to personality, with particular reference to the typologies taken into consideration in this study, it emerged that intuitive subjects were more likely to recall dreams of a symbolic order, while introverted subjects referred more to dreams of every-day life than extroverts (Jacka, 1988; Cann and Donderi, 1986). In his study entitled “Personality and Adult Perceptions of Childhood Dreams”, Jacka (1988) highlighted how, through the use of the MBTI and the Childhood Dream Questionnaire (Osgood, Suci, Tennenbaum, 1957), significant differences between polar personality organizations. Intuition and sensation seemed to be oriented in the opposite way, as well as thought and intuition.

The MBTI (Myers, 1962) defines binary classes of personality organization respectively, whereby there is the presence of Extroversion / Introversion in terms of attitudes and Intuition / Sensation, Thinking and Feeling in terms of personality functions. The organization of this test formalizes personality types into classes. The Big Five model (Costa and McCrae, 1985; McCrae and Costa, 2008) instead organizes the personality through 5 bipolar scales: Extraversion (sociable / shy), Emotional Stability (secure / neurotic), Agreeableness (friendly / unfriendly), Conscientiousness (organized / careless), Openness to Experience (insightful / unimaginative). Correlational analyzes revealed that some Big Five variables assumed significant relationships with MBTI domains, such as the Big Five extraversion was related to the Extraversion / Introversion domain of the MBTI. Similarly, the Big Five's Openness to Experience was significantly related to MBTI's Sensation / Intuition, as well as Conscientiousness with Judgment and Perception functions (Furnham, Moutafi, & Crump, 2003). The possibilities offered by these tools are therefore useful for the comparison of classes or personality scales, with the dynamics of the dream. The dream has historically represented and continues to represent, a set of phenomena considered influential on the lives of individuals.

In a recent paper, Forrer (2017) treated the importance of

considering the influence of dream representations on waking life, based on the subject's projections. This perspective cited as *vita somnium* is treated on the basis of a possible speculative approach linking dream to waking life. A recent evolution suggested that dream dynamics have a relevant impact that can be considered as a parable of being (Forrer, 2018). Consciousness is clearly influenced, personality dynamics and structures involve creativity and adaptation processes (Forrer, 2014).

The author's appeal to the Jungian perspective is evident. The extensions of the dream experience were also considered as influencing the adaptation process, on the basis of inner images of adolescents and emerging adults (Schavieren, 2005; Settineri, 2019). The realities considered contemplate the psychopathological outcomes of the subjects, such as in the case of experiences of anxiety, anguish and doubt related to the psychic object (Beebe, 2005; Colman, 2011; De Stasio et al., 2019; Demacheva & Zadra, 2019; Fossati et al., 2020; Merlo, 2019a; Schellinski, 2014). Our study takes into account the relationships among attitudes and functions of the Jungian conception of personality with the dream variables considered by the Mannheim Dream Questionnaire.

Given the above, we hypothesize that extraverted persons are more likely to share their dreams, to consider emotional burden coming from dreams and to search information about their dreaming experiences (Hp 1); a greater propensity of people with prevalent intuition and thinking to search for meaning and to mind about bodily experiences and feeling respectively for the other functions (Hp 2); a greater inclination for younger subjects to focus on bodily dynamics, to record dreams and an extensive tendency for female subjects to consider dream phenomena (Hp 3).

2. Method

2.1. Study population

The sample consisted of 287 subjects, 196 (68.3%) females and 91 males (31.7%). The age of participants ranged from 18 to 27 years old (Mean: 20.5; SD: 3.48). The subjects attend study courses aimed at undertaking medical and healthcare professions. All subjects spontaneously and voluntarily adhered to the administration of the questionnaires. This study is linked to the regional project for “High risk and Fragile adolescents”, aimed at the improvement of adolescents and emerging adults' psychological resources.

2.2. Research instruments

2.2.1 *Myers Briggs Type Indicator Form F*

For evaluation of personality types, the The Myers-Briggs Type Indicator F Form (MBTI; Myers, 1962) was used to assesses two attitudes. As reported by Settineri et al. (2019a), extraversion can be considered as the orientation of energy towards the outside, while introversion represents energy emanating from within the individual. The attitudes represent the subject's way of going towards external or internal objects. The resonance that these psychic objects have for the subject constitutes the oriented adaptation and representation process. The four functions are respectively. Sensation and Intuition, based on the subjective resonance that objects have for the individual. They do not require rational-

ity, the meaning and direction of the objects is of subjective comprehension. Thinking and Feeling, rational functions based on a logical order.

According to the study of Lamond (2001) the reliability of the MBTI has been highlighted in different research papers across the time. About the internal consistency, Myers and McCaulley (1985: 165-169) presented a selection of split-half reliabilities suggesting a continuity with other important personality measures. The measure of coefficient alphas (Cronbach, 1951) was reported by the authors of the MBTI, indicating a range from 0.64 to 0.85 (Myers and McCaulley, 1985).

Capraro and Capraro (2002) reported two important facts about the research related to the MBTI reliability studies. First, the Cronbach's alpha scores belong to a huge experimentation, conducted at the Center for Psychological Type (Myers & McCaulley, 1985), involving a high number of participants, as follows: EI = .79, SN = .84, TF = .74, and JP = .82 on more than 32,000 participants; EI = .74 to .83, SN = .74 to .85, TF = .64 to .82, and JP = .78 to .84 on more than 10,000 participants.

As suggested by Lamond, other researchers performed analysis, as Striker and Ross (1964), finding good internal consistency about the scales EI, SN and JP ($\alpha = .75 - .85$) and at the same time a good retest stability ($\alpha = .70$). These authors found correlations between continuous scores from 0.77 to 0.89. The above-mentioned reliability scores, as stated by Gardner & Martinko (1996), can be considered as consistent with those reported in the literature.

Costa and McCrae (1985, 1992) found the MBTI being consistent with test-retest reliabilities of other trait personality tests, as the NEO-PI. Lamond also suggested other research indicating the MBTI as more consistent than other tests, like the California Psychological Inventory or the Adjective Check List (Pearman, 1993).

Finally, Capraro and Capraro cited an important metanalysis of Harvey (1996), showing data coming from 102,174 respondents. As a final result, this metanalysis produced corrections on the split-half estimates on men and women: EI, .82 and .83; SN, .83 and .85; TF, .82 and .80; JP, .87 and .86. His conclusion was: "Test-retest reliabilities for MBTI scores suggest score consistency over time."

2.2.2 MADRE Questionnaire

Developed by Schredl et al. (2014), its Italian adaptation of the questionnaire was provided by Settineri, Frisone, Alibrandi, & Merlo (2019b).

Regarding the structure of the items, as reported by the original and the Italian versions (Schredl et al., 2014; Settineri, Frisone, Alibrandi & Merlo, 2019b) dream recall is presented with a 7 point likert scale (0 = never, 1 = less than once a month, 2 = about once a month, 3 = about 2 to 3 times a month, 4 = about once a week, 5 = several times a week, 6 = almost every morning). Emotional intensity and emotional tone present a five point scale are used, respectively intensity from 0 not at all intense, to 4, very intense (0 = Not at all intense, 1 = Not that intense, 2 = Somewhat intense, 3 = Quite intense, 4 = Very intense) and tone from -2 very negative, to +2 very positive (-2 = Very negative, -1 = Somewhat negative, 0 = Neutral, +1 = Somewhat positive, +2 = Very positive). Nightmare frequency (current and childhood), lucid dream, telling dreams, recording dreams, dreams affecting daytime mood, creative dreams, problem solving dreams and déjà vu experiences are presented with

a eight point scales (0 = never, 1 = less than once a year, 2 = about once a year, 3 = about 2 to 4 times a year, 4 = about once a month, 5 = about 2 to 3 times a month, 6 = about once a week, and 7 = several times a week). Referring to Attitude towards dreams, together with meaningfulness and impulse, the five-point scales are used (from 0 = Not at all, 1 = Not that much, 2 = Partly, 3 = Some-what, and 4 = Totally). Other items are Nightmare distress with a five-point scale (0 = Not at all distressing, 1 = Not that distressing, 2 = Somewhat distressing, 3 = Quite distressing, and 4 = Very distressing), recurring nightmares (Yes / No), percentage of recurring nightmares (%). The item age of first Lucid Dream is a numerical variable, reading about dreams has a three points scale (0 = No, 1 = One to two times, 2 = several times) and helpful dream literature a five-point scale (0 = Not at all, 1 = Not that much, 2 = Somewhat, 3 = Quite, and 4 = Very much).

The instrument involves variables about dreams and related phenomena, retest reliability has been performed by Dyck, Schredl & Kühnel, (2017): Dream recall frequency .826 (.751 to .883), Emotional intensity .745 (.598 to .825), Overall emotional tone .764 (.708 to .797), Nightmare frequency (current) .876 (.843 to .918), Nightmare frequency (childhood) .917 (.907 to .929), Nightmare distress .823 (.754 to .901), Recurring nightmares (Yes/No) .899 (.825 to .958), Percentage of recurring nightmares .971 (.962 to .984), Lucid dreaming frequency .902 (.862 to .959), Age of first lucid dream .967 (.936 to .991), Meaningfulness .775 (.687 to .869), Attitudes towards dreams .883 (.841 to .924), Telling dreams .784 (.628 to .860), Recording dreams .706 (.502 to .973), Dreams affecting daytime mood .853 (.787 to .921), Creative dreams .873 (.811 to .910), Problem solving dreams .827 (.719 to .902), Déjà vu experiences .843 (.767 to .918), Reading about dreams .837 (.763 to .954), Helpful dream literature .841 (.772 to .913).

2.3. Statistical Analysis

The numerical data were expressed as mean and standard deviation and the categorical variables as number and percentage. The Spearman test was applied in order to evaluate the correlation among variables of the following instruments. Linear, logistic and ordinal regression were used to assess dependence relations. Statistical analyses were performed using SPSS 20.0 for Window package. A P-value smaller than 0.050 was considered to be statistically significant.

3. Results

Hp 1. This section of the study reports non parametric cor-

Table 1. Frequency and percentage for categorial variables

Variable	Frequency	Percentage
Extraversion	103	35.76%
Introversion	185	64.23%
Intuition	67	23.26%
Sensation	157	54.52%
Thinking	62	21.52%
Feeling	2	0.70%

Table 2. Means and Standard deviations for numerical variables

Variable	Mean	SD
Dream recall frequency	3.94	1.62
Emotional intensity	2.39	1.01
Overall emotional tone	1.81	0.92
Nightmare frequency	3.98	1.98
Nightmare distress	1.80	1.06
Percentage of recurring nightmares	24.43	24.53
Nightmare frequency (childhood)	3.80	1.96
Lucid dream frequency	3.52	2.40
Age of the first lucid dream	12.34	3.55
Meaningfulness	2.34	0.98
Impulse	2.62	1.04
Telling dreams	4.34	2.30
Recording dreams	1.21	2.17
Dreams affecting daytime mood	3.38	2.63
Creative dreams	2.89	2.44
Problem solving dreams	1.96	2.32
Déjà vu experiences	4.37	1.98
Reading about dreams	1.07	0.74
Helpful literature	1.87	1.09
Attitudes toward dreams	21.03	6.21
	Frequency	Percentage
Recurring nightmares	122	42.36

relations among the above-mentioned attitudes and dream variables. The first significant correlation emerged among attitudes and overall emotional tone. The polar dimension of attitudes was respected and highlighted by this relation.

In an opposite way, a significant and negative relation emerged with respect to introversion.

The second significant relation emerged among attitudes and telling dreams. In our experience, higher levels of extraversion correspond to a positive tendency to express dreams' contents.

Especially in this case we expected the polarity to be maintained, therefore a significant and founded difference between introversion and extroversion emerged. Introversion was in a significant and negative relation with creative dreams and problem solving dreams, suggesting that higher levels of introversion correspond to minor capacity to be creative and to solve problems through dreams. Introversion is theoretically described in terms of a greater propensity to stay in touch with the internal world. In this case, the data referred to creativity and problem solving, based on the items referred to external facts. Although introverted subjects demonstrate greater imagination and regression in the service of the Ego, the data emerged in this study refers to

Table 3. Spearman non parametric correlations among attitudes and dream variables

Variable	Mean	SD
Dream recall frequency	,095	-,068
Emotional intensity	,057	-,027
Overall emotional tone	,249**	-,219**
Nightmare frequency (adulthood)	-,047	,032
Nightmare distress	-,068	,052
Percentage of recurring nightmares	,018	-,034
Nightmare frequency (childhood)	,007	,002
Lucid dreaming	,059	-,063
Age first lucid dream	,019	,031
Meaningfulness	,067	-,090
Impulse	,033	-,054
Attitudes towards dreams	,087	-,099
Telling dreams	,206 **	-,164**
Recording dreams	,009	-,083
Dreams affecting daytime	,022	-,040
Creative dreams	,080	-,136*
Problem solving dreams	,094	-,130*
Dejà vu experience	,088	-,073
Reading about dreams	,116*	-,120*
Helpful literature	,123*	-,154**

the external realization.

Extraversion was in positive and significant relation with reading about dreams and helpful literature. Reading about dreams and helpful literature represent an appeal to external information.

In opposite terms, introversion was in a significant and negative correlation with these two variables. This fact corresponds to a significant facility in order to research information for extraverted subjects.

Hp 2. This section of the research is about the non parametric correlations among functions related to personality and dream variables. The first correlation emerged is referred to thinking and dream recall frequency. The relation emerged was significant and negative, highlighting that greater propensity to thinking corresponds to a lower tendency to recall dreams' contents. Jungian theory places dream dynamics within the irrational sphere.

The negative relationship that emerged suggested this distance between the symbolic expressed by the dream and the pure rationality of thought.

Emotional intensity showed positive relation with intuition and negative with sensation. In this case, emotional intensity grows with intuitive subjects, contrary to sensitive ones.

Overall emotional tone was in a negative relation with intuition and in a positive one with sensation. The function closest to the most intense and dysfunctional emotional

Table 4. Spearman non parametric correlations among functions and dream variables

Variable	Intuition	Sensation	Thought	Feeling
Dream recall frequency	.018	-.060	-.133 *	.113
Emotional intensity	.158 **	-.176 **	-.093	.026
Overall emotional tone	-.125 *	.137 *	-.081	.026
Nightmare frequency (adulthood)	.120 *	-.131 *	-.076	.128 *
Nightmare distress	.128 *	-.146 *	-.010	.072
Percentage of recurring nightmares	.125 *	-.173 **	.074	-.009
Nightmare frequency (childhood)	.092	-.110	-.025	.087
Lucid dreaming	.061	-.084	-.126 *	.108
Age first lucid dream	-.057	.097	.065	-.064
Meaningfulness	-.125 *	.112	-.177 **	.186 **
Impulse	.167 **	-.192 **	-.110	.121 *
Attitudes towards dreams	.192 **	-.212 **	-.154 **	.136 *
Telling dreams	.003	-.003	-.275 **	.273 *
Recording dreams	-.204 *	.206 *	.096	.128 *
Dreams affecting daytime	.089	.097	-.223 **	.232 **
Creative dreams	.144 *	-.182 **	-.150 *	.129 *
Problem solving dreams	.131 *	-.133 *	-.238 **	.208 **
De jà vu experience	-.002	-.060	-.087	.111
Reading about dreams	.180 **	-.176 *	.039	-.025
Helpful literature	.054	-.050	-.112	.145 *

loads was sensation. In the opposite direction to intuition, the privilege of being able to immediately grasp intense bodily facts was this function.

Nightmare frequency during adulthood, showed significant relations with personality functions, but rather thinking. Those with intuition and feeling were positive, while sensation was negative.

In the same way the movements of intuition have a tendency to deepen the dynamics. This emerged about nightmares, whose burden is undoubtedly strong. In this sense, higher frequency of nightmares during adult life was related to intuition and feeling functions of the considered subjects, whereas a lower frequency was related to sensation. The distress coming from nightmares was in a positive relation with intuition demonstrating the will to find a way of sense for oneiric expressions and negative with sensation.

The opposite sense of these irrational functions was highlighted by this relation, so that growing intuition was related to higher levels of distress and lesser with sensation.

Hp 3. Ordinal regressions with age and gender as independent variables were performed in order to highlight their causal relations with dependent variables of Madre Questionnaire. This operation aimed to consider significant dependencies between age and gender and dream phenomena in future health professionals involved in our study. The need depends on a future comparison that our subjects will make between personal experiences and patient experiences. This turns out to be a fundamental fact, at the basis of the difference between comprehension and explanation highlighted by K. Jaspers (1913) and adopted by Jung.

Several causal relations emerged, in reference to both independent variables. In a previous study (Settineri, Frisone,

Alibrandi, Merlo, 2019b) the relevance of age and gender as variables intervening on dreams was highlighted. Starting from age, the relations emerged were those with Nightmare distress, Percentage of recurring nightmares, Age of first lucid dream, Meaningfulness, Impression dream impulse, Telling dreams, Recording dreams, Dreams affecting daytime mood, Déjà vu experiences. All associations were negative, but rather age of the first lucid dream, so that it was possible to highlight how younger subjects are more influenced with reference to the above mentioned dream dynamics.

Referring to gender, the causal relations emerged were with Dream recall frequency, Emotional intensity, Telling dreams, Dreams affecting daytime mood, Creative dreams, Reading about dreams, Helpful dream literature.

4. Discussion

The possibility offered by the validation of the MADRE Questionnaire by Schredl et al. (2014) allows us to study the relationship among the dream dynamics and interesting aspects of the personality. In our case, this possibility refers to the Psychological Types of C. G. Jung (1921), as proposed by Myers and Briggs (1962). The different adaptations of the Mannheim Dream Questionnaire (Ghorayeb, Napias, Denechere, & Mayo, 2019; Scapin, Dehon, & Englebert 2018; Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2014; Shahabian et al., 2017; Settineri, Frisone, Alibrandi & Merlo, 2019b) made it possible to extend this dream study methodology to different linguistic contexts.

Through the analysis, several significant correlations emerged, highlighting the relationships existing in our observation group, between dreams and personality. The first hypothesis was about the relationships between attitudes and

Table 5. Ordinal regression analyses

Variable	Age		Gender	
	B (CI)	p	B (CI)	p
Dream recall frequency	.012 (-.047 / .071)	.684	.499 (.056 / .942)	.027*
Emotional intensity	-.025 (-.086 / .036)	.419	.606 (.149 / 1.063)	.009*
Overall emotional tone	-.048 (-.109 / .014)	.128	-.343 (-.801 / .114)	.141
Nightmare frequency (current)	-.042 (-.101 / .016)	.158	.776 (.330 / 1.221)	.001*
Nightmare Frequency (childhood)	-.108 (-.169 / .048)	.000*	.226 (-.218 / -.671)	.318
Nigtmare distress	-.071 (-.133 / -.009)	.026*	1.035 (.560 / 1.511)	.000*
Percentage of recurring nightmares	-.063 (-.124 / -.002)	.042*	.802 (.350 / 1.255)	.001*
Lucid dreaming frequency	-.003 (-.061 / .056)	.930	.130 (-.307 / .567)	.559
Age of first lucid dream	.084 (.014 / .153)	.018*	-.161 (-.649 / .327)	.517
Meaningfulness	-.115 (-.177 / -.052)	.000*	.389 (-.072 / .850)	.099
Impression dream impulse	-.107 (-.169 / -.045)	.001*	.416 (-.039 / .872)	.073
Telling dreams	-.092 (-.153 / -.031)	.003*	.745 (.300 / 1.190)	.001*
Recording dreams	-.129 (-.224 / -.035)	.007*	.306 (-.264 / .876)	.293
Dreams affecting daytime mood	-.063 (-.124 / -.002)	.043*	.535 (.090 / .979)	.018*
Creative dreams	-.009 (-.072 / .054)	.781	-.497 (-.939 / -.055)	.027*
Problem solving dreams	-.032 (-.096 / .032)	.323	.163 (-.301 / .627)	.491
Déjà vu experiences	-.161 (-.223 / -.100)	.000*	-.228 (-.669 / .213)	.311
Reading about dreams	-.014 (-.076 / .049)	.667	.910 (.433 / 1.387)	.000*
Helpful dream literature	-.049 (-.111 / .013)	.121	.754 (.292 / 1.216)	.001*

dream variables. As suggested in the introduction, our work steams from the necessity to assess the above-mentioned relations, since there is a lack of knowledge in literature. A clear example of the study of the Madre dimensions with respect to MbtI dynamics is represented by the only work in literature, assessing the existing relations. The authors (Zhao, Wang, Feng, & Shen, 2020) developed a consistent analysis of the significant relations. In our experience, the polar dimension of attitudes was maintained along all correlations, according to Zhao and colleagues (2020). The correlation between extraversion and overall emotional tone was positive, suggesting that high levels of extraversion correspond to major affective dynamics. A greater openness to external experiences was revealed to be connected to a greater emotional level linked to the dream, according to the dimensions analysed by Furnham, Moutafi, & Crump (2003), with particular reference to the common characteristics shared by personality measures. This was indicative of the propensities of extroverted subjects towards psychic objects, with particular reference to those oneiric dynamics which are then dysfunctional. Jungian theory of psychological types took into account similar phenomena, where a greater propensity for external objects made extroverted

subjects less willing to resolve internal conflicts. This data emerged could be in continuity with this dynamic.

This data is relevant, given the constitution of the analytical personality theory. In particular, the reference to overall emotional tone informed us about the fact that subjects' extraversion grows in the same sense. In these terms, the extroverted dimension puts the subjects in a position to be affected by the excessive emotional burden due to dreams.

For introverted subjects this dimension appeared inverse, demonstrating that the increase in introversion did not correspond to the increase in disturbing dream emotions, contrarily to Zhao and colleagues' findings. A natural propensity to face internal dynamics, representations and dreams was typical of introverted subjects. Maintaining this polarity informs us about the foundation of the Jungian theory. Subjects with more propensity to come into contact with representations and emotional nuclei related to them, proved less inclined to suffer from dreamlike phenomena. The second interesting fact concerns the propensity of subjects to tell dreams. In line with the theory, extroverted subjects demonstrated to lead to a greater propensity in narration, while introverted subjects were closer to internal elaborations of

Table 6. Logistic regression analysis

Variable	Age		Gender	
	B (CI)	p	B (CI)	p
Recurring nightmares	1.139 (.677 / 1.918)	.623	.915 (.677 / 1.918)	.092

Table 7. Linear regression analysis

Variable	Age		Gender	
	B (CI)	p	B (CI)	p
Attitudes towards dreams	-.369 (-.574 /-.164)	.000*	.966 (-.557 / 2.490)	.213

objects and dream representations.

Relationships with others, regulated by attitudes, proved to be adherent to the dynamics of psychological types. Two psychological structures that moved in the same direction concern creativity and problem solving, which in the introverted subjects showed inverse relationships with introversion. This data proposed a dynamic whereby the increase in introversion removed the consciousness of being able to solve problems and be creative through dream images. It is important to clarify that the dimensions of the dream evaluated by this study, referred to the knowledge that the subjects have of their own dream experiences. In analytical terms, this explained the discrepancy between the ease of introverted subjects to handle dream images and their reliance on the conscious resolution of problems. This also happens for creativity.

We need to mention the unconscious and symbolic nature of the phenomena, from which this knowledge of non-dependence between dream and conscious reality could derive. For both the variables concerning the interest in literature about dreams, the aforementioned polar dimension reappeared. In particular, extroverted subjects proved to be in line with the possibility of knowing the dream through literature, unlike introverted subjects who would remain in this sense more tied to their internal dynamics.

Regarding the second hypothesis, the first interesting datum deserving a particular reflection regards the function of Thought. In detail, in the significant relationships with the dream variables, it always appeared in a negative sense, according with the findings related to the greater propensity of intuitive and sensitive subjects to get in touch with dreams metaphors and symbols (Zhao, Wang, Feng, & Shen, 2020). This suggests that the most rational dynamics and at least adhering to the logic of reality were not very close to dream representations. This maintained the value of approaching the dynamics of the dream in a rational way is fundamental, but suggested that the phenomena occur in a dream often require a particular hermeneutic. The significant relationships were manifold, as reported by the results. Referring to the second rational function, the feeling, emerged starting from the nightmares (adulthood), in terms of positive correlations also for the rest of the dream variables.

The important difference also concerns the internal polarity between functions. With particular reference to rational functions, it is known that they are diametrically opposed to each other. Thinking in terms of personal or general logical elaboration, feeling on the basis of common or personal moral and ethical action. This polarity was maintained by the functions in our study. Positive relationships between dynamics concerning the processes of signification, communication and information about the dream had been detected.

With regard to irrational functions, the polar organization was also maintained. Depending on the dream variables, significant oppositions between the functions were detected. The fundamental role of intuition does not exclude

feeling and preserves its value in the various subjects. Both functions have shown significant relationships, although each belongs mainly to a type of subject and vice versa.

With regard to the latter hypothesis, the choice of independent variables has proved to be advantageous. It was possible to highlight relevant dynamics that suggested propensities in the approach to dreams, with reference to age. The symbolization and signification processes of the mental images foresee a maturation process. This happens in everyone's psychic life, following the directions that lead the subjects to what Jung called the individuation process, in its relations with personality (Meirer, 1995). The data emerged were congruent to this perspective, as reported by Meirer (1995) in his book about individuation process and personality. The manifestations that mostly concerned younger subjects in fact concerned impulses, attitudes, certainly the most youthful ability to share and record dreams and finally to be influenced in the mood. In line with the reference theory (Jung, 1933), a greater propensity to reflect and symbolize the images emerged from dreams will grow with age.

A greater propensity of the feminine towards dreamlike manifestations emerged concerning the second independent variable which was gender. The significant relations emerged, starting from age predictor, highlighted a lower effect of age on nightmare frequency, distress, recurring nightmares, the mining given to dream experience, the tendency to share and record dreams. The same direction was assumed by the emotional impact of dreams on waking life's mood and déjà vu experiences. This data, shown similarities with relevant studies mentioned in the introduction, so that it was possible to consider our data as in line with well known perspectives.

In particular, classical approaches on the basis of the decrease of dream relevance due to ageing suggested shorter REM phases due to ageing (Miles & Dement, 1980) and a progressive decrease of dream recall attitudes (Schredl and Göritz, 2015, Schredl, & Erlacher, 2011). The same directions appear to be assumed by general attitudes towards dream meaning.

With reference to the gender predictor, the significant dependencies emerged regarded dream recall frequency, emotional intensity, the current nightmare frequency and percentage, the distress due to adverse dreaming experiences, the propensity to share, read and get information about dreams. The interesting fact was related to the directions assumed by these dependencies, since all dependencies but rather creative dreams appeared as positive. The effect of gender was detected as significant for relevant variables, in line with the findings addressed by Mangiaruga et al. (2018), Settineri, Frisone, Alibrandi, Merlo (2019) and Schredl et al. (2014).

As suggested by Kast (2012), the path of the identification process involves several archetypal figures. The meanings that come closest to the binary logic of the gender issue are animus and anima. In the particular case, we have found a greater propensity of female subjects to many and fun-

damental dream variables. The process mentioned above, therefore, requires that these functions be vice versa integrated, since the anima in dreams and mythology can be relevant to women as well as men (Relke, 2007, p. 1). These integrations are fundamental in the context of representations, as well as in their links with the emotions of the subjects and future patients.

The interesting intersections between evidence-based neuroscience and mental functioning based on dream dynamics inform us about the processes of managing emotions (Wilkinson, 2006). In this sense, analytical psychology highlights not only the processing of emotions from difficult conscious management, but also the consequent processes of search for meaning (Marozza, 2005). Our clinical experience refers to hospital contexts, for which the searching purpose of this study was to highlight precise dynamics that exist for example in the relationships between health professionals and patients (Caputo, 2013; Carli, Panniccia, Porcelli, Caputo; Merlo et al., 2020; Settineri et al., 2019c).

In particular, those oneiric processes that in the sense of Schredl et al. (2014), are intertwined with the conscious and defensive dynamics of the subjects. The transformative processes of mental functioning, do not infrequently affecting the corporeality of the subjects, producing these pathological outcomes well known by psychosomatics (Kradin, 2011). Recent research on the role of dreams (Settineri, Frisone, Alibrandi & Merlo, 2019a), highlighted the aforementioned pathological dynamics in managing emotions. The fundamental point is represented by the defensive structure of the subjects, which as it is known intervenes in order to adapt the subject to the environment. This adaptive purpose of the defenses often reaches the point where it decompensates the subjects up to the structuring of precise chronic phenomena (Martino et al., 2019a, 2019b; Di Giuseppe et al., 2018) that can be defined as a loss of a good Self (Marchini et al., 2018). Therefore, the personal ways to enter into a relationship with psychic objects are transformed into symbolic products or as in the case of alexithymia, are directed towards the body (Rosa, Tomai, Lauriola & Martino, 2019).

The contact of the clinic professional with these realities requires a hermeneutical approach (Smythe & Baydala, 2012), for those manifestations that spontaneously present themselves in the clinical observation. It is necessary as well for the disrupted examples (Vuleti, 2018) which present themselves as symbols and symptoms (Stein, 2015; Bonnet, Belot, Sanahuja & Vandel, 2019). The question of the analysis of the subjects' narrations is fundamental, since the symbolic result provides for a hermeneutic necessity and that the very meaning of the word personality is linked to the theme of the mask (Manfredi & Massardi, 2019).

The possibility offered by the analyses is configured as a metric through which it is possible to bring out those scopic drives that direct the subject in the directions of adaptation and maladjustment (Blourlot, 2015, 2019). The dream experience represents an opportunity to comprehend the subject's personality. This study focused on the relationships between two worlds which may seem distinct, but in reality, often overlap and influence each other. The theme of the relationship between fiction and narrative is therefore fundamental for the comprehension of the above-mentioned overlaps (Bourlot, 2018), provided that the psychic narrative is considered in a scientifically oriented way. Our work aimed at taking into consideration a fundamental aspect. Our clinical experience on the topics covered has been

mentioned throughout the work. With reference to the subjects considered, as clarified in the method section, the reference is due to the propensities and scientific ambitions of the participants. It is in fact a group of subjects who attend study courses aimed at medical and health professions. The subjects therefore, spontaneously offering their experience to research, expressed an interest due to the future need to compare their own ways of representing the world to future patients' manifestations.

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