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Personality Types and L2 Reading: Correlation between University Students MBTI Profiles and Reading Proficiency

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Abstract. Personality types have a considerable impact on our understanding of the outer world, perception and energy. Personality influence on language learning and proficiency, however, is controversial. This study demonstrates the relationship between the Myers-Briggs Type Indicator (MBTI) profiles and L2 reading proficiency of L1 Arab undergraduates. First, learners' reading proficiency levels were associated with their Introversion/Extraversion preferences. Then, function pairs of both introverts and extraverts that contributes to the highest score of L2 reading proficiency were determined. As most reading tests are based on choice, it is very logical to consider the MBTI function pairs as they represent the mental functions used for decision-making and information gathering. Fifty (50) Arab male students from the College of Business Administration (Saudi Arabia) were randomly selected. Two instruments were used to collect data; MBTI as a personality instrument, and TOEIC Bridge as a reading test. Findings showed a lack of statistically significant relationship between Introversion/Extraversion and L2 reading proficiency. Yet, Intuitive personalities (NT/NF) preferences achieved higher scores in the TOEIC Bridge compared to their counterparts of the Sensing personalities (ST/SF). Personality types have undoubted influence on our lifestyle and attitudes. Yet, considering personality as a weighty factor in language learning and proficiency is still debatable.

Keywords. MBTI; Personality Types; Reading Proficiency; Arab Learners; L2

1. Introduction

Personality is a set of qualities that reflects what people say, how they do and what they do as a way of putting "a unique stamp on their action" (Carver & Scheier, 2012, p.2). The American psychologist Allport (1961, as cited in Carver & Scheier, 2012) defined personality as "a dynamic organization, inside the person, of psychophysical systems that create the person's characteristic patterns of behaviour, thoughts, and feelings" (p.4). According to Jung's theory (1973, as cited in Behaz & Djoudi, 2012), which will be discussed in detail later, each individual has a natural preference, that when used preferably, usually "succeeds better and feel[s] more competent, natural and dynamic" (p.136).

Jung's Psychological Types theory proposes six types in which individuals differ and categorised them into three groups: attitudes (Extraversion/Introversion), perceptual functions (iNtuition/Sensing), and judgmental functions (Thinking/Feeling). The most common and broad Jungian types are Introversion/Extraversion. Extraversion/Introversion attitudes label individuals' mind-sets when dealing with others. According to Myers and Myers (2010), introverts and extraverts Complement each other, yet they are quite different. An extravert, for

Richards and Schmidt (2002), is “a person whose conscious interests and energies are more often directed outwards [to] other people and events than towards the person themselves and their own inner experience”, while an introvert is seen as “a person who tends to avoid social contact with others and is often preoccupied with his or her inner feelings, thoughts and experiences” (p.213). Regarding perceiving preferences, an iNtuitive person is likely to perceive stimuli comprehensively, concentrating on meaning rather than details, while a Sensing individual observes information realistically and accurately. The judgment or understanding of perceived stimuli is embodied in two ways; Thinking individuals are likely to be impersonal, logical and analytical, whereas Feeling people are grounded more on values than logic (Sternberg & Grigorenko, 1997). Since personality types have a great influence on individuals’ lifestyles, attitudes and preferences (some references here), it is logical to observe the salient impact of personality traits on their academic performance (Ehrman, 2008). Roth (2012) claims that understanding personality is crucial as it determines the rationale behind contradictions in terms of identity and consideration of differences in proficiency and practice. Former research attempted to explain the relationship between personality and learning portrayed Extraversion as the master type (compared to Introversion) in language learning (e.g.; Dewaele & Furnham, 1999; Cox-Fuenzalida et al., 2006). Even when Introversion was examined, most studies gave little attention to the other different types offered in MBTI; more specifically, to function pairs (iNtuitive-Thinking, iNtuitive-Feeling, Sensing-Feeling or Sensing-Thinking). As described by Myers et al. (1998), a mental function (pair) consists of one information-gathering function (S/N) and one decision-making function (F/T). Hence, four combinations arise and these are ST (Sensing plus Thinking), SF (Sensing plus Feeling), NF (iNtuition plus Feeling) and NT (iNtuition plus Thinking).

One important skill to consider when examining the relationship between language learning and personality is literacy. A limited number of studies, such as DiTiberio and Jensen (2007); Ellis (2004) and Sak (2004), examined the correlation between literacy (in terms of reading and writing) and personality. Recently, psychologists started to pay attention to reading as an aspect of personality. For instance, Dollinger (2015) argues that reading preferences may tell a lot about “person’s inner life.”(p.1) In his paper “you are as you read” (2015), he explains that interests are more likely to be self-selected than are one’s personality traits (at least for leisure reading). And so, considering reading as an essential aspect when comparing literacy to personality is reasonable. The above arguments laid a foundation for the present study.

In fact, existing literature on the correlation between Introversion/Extraversion and reading is insufficient and more underrepresented in the Arab region for English second/foreign language learners. Most studies that examined English reading ability for L1 Arabic learners have focused on external factors, such as learners’ reading strategies (Al-Nafisah, 2011), or reading interests of and material sources available to Arab learners (Bataineh & Al-Barakat, 2005). Literature on internal aspects such as personality have so far, not been conclusive.

2. Literature Review

2.1. Personality Types and Reading Comprehension

In educational research, personality attracted many pedagogists and educational psychologists where a good deal of interest has been dedicated to the relationship between students’ personality and their learning processes. Since personality influences people’s response to stimuli and the way in which they like better to learn (Ehrman & Oxford, 1990; Myers & Myers, 2010), many researchers agreed on the vital role of personality on learning among other variables that describe learners’ shapes of cognitive procedure and various intellectual functions (Skehan, 1991). Regarding language learning and since personality types

are “those aspects of an individual’s behaviour, attitudes, beliefs, thoughts, actions, and feelings which are seen as typical and distinctive of that person and recognized as such by that person and others” (Richards & Schmidt, 2002, p.395), Ehrman and Oxford (1989) believed that each of those aspects and preferences that compose a psychological type has its own properties and commitments when it comes to language learning. For example, it is suggested that introverts should perform better than extraverts under low levels of stimulation and they should perform less well at high levels of stimulation (Furnham & Petrides, 2014).

A review from previous literature suggests that introverts are more advanced in tasks that demand the consciousness of knowledge such as reading and writing, than in calculative problem-solving activities, whether directly or indirectly. This hypothesis is supported by many researchers such as Himmelweit (1946) and Robinson et al. (1994). Ellis (2004) further claimed that there is a noticeable perception of Extraversion having a positive influence on L2 basic interpersonal skills development such as communication. That is extraverted learners are expected to easily cooperate with other speakers of L2. Introspective (introverted) learners, on the other hand, may have an advantage in developing higher levels of cognitive academic language proficiency.

As for reading, if we question “why some readers outperform others as good readers?” (As cited in Sadeghi et al., 2012, p.120), then integrating reading into language learning sounds reasonable highlighting the ‘Good and Poor Reader’ concept. Reading comprehension has been described as the procedure in which meaning is unlocked from a written text. A great deal has recently been given to reading comprehension as a major source of knowledge in second/foreign language assessments (Ellis, 2004).

The psycholinguistic approach to reading research has two sub-approaches; the first is linked to the required components in the reading process, and the second is associated with components’ relationship with each other. In brief, text reading ability and language competence mark person's understanding of a written text. The simple two-component models are categorised as the reading component and the language component.

Based on this view, good readers were found to be conscious of their purposes for reading and they tend to apply repertoires of cognitive strategies for processing texts (Grabe & Stoller, 2002; Pressley, 2002). They use context and prior knowledge more efficiently for comprehension purposes as well (Kintsch, 1988). Whereas, poor readers adopt a word-centred model of reading, trying to process word meaning rather than trying to comprehend and retain the meaning of the text. Therefore, they report seldom use of rigorous cognitive strategies, such as guessing, activating prior knowledge and using imagery (Anastasiou & Griva, 2009).

With reference to literacy in the Arab region, most of the existing literature has attempted to investigate the reading motivation and interests of Arab students. Bataineh and Al-Barakat (2005) examined first-, second-, and third grade students’ reading interests in terms of reading material sources and reading attitudes. Their findings showed that stories and picture books as well as magazines illustrated good learners’ reading interests; the school library to be the major source of reading materials and students have a positive attitude towards reading. Bataineh and Al-Shorman (2005) confirmed that reading is mainly for school-related purposes as the majority of their participants asserted that reading was done out of obligation rather than of a desire to do so. However, when choosing a foreign language reading material, English in this case, students were found to depend on themselves, teachers, and their friends rather than on their parents as most of those parents were not proficient in the language (Al-Nafisah, 2011).

Several studies have identified the relationship between personality and academic performance. For instance, Chamorro-Premuzic and Furnham (2003) carried out three longitudinal studies of two British university samples that aimed to comprehend the relationship

between academic performance and personality traits. Other indicators such as tutorials, attendance, essay writing, tutors' exam predictions were also considered in the above research. The findings revealed a significant relationship between personality and academic performance. However, a sizable research carried out by Ehrman and Oxford (1995) investigated the relationship between individual differences and language learning variables where 855 American language learners at the Foreign Service Institute of the U.S. State Department participated in the study. Their findings showed no significant relationship between extraverts and written Modern Language Aptitude Test scores.

Another research by Ehrman (2008) suggested that the psychological types of the top 2% of best language learners out of 3,145 learners where introverted-intuitive-Thinking-judging (INTJ) types were significantly over-represented. Therefore, researchers determined that the best language learners are more likely to hold introverted personalities, are intuitive and they are logical and precise thinkers who are able to exercise judgment. This conclusion contradicts much of the past literature (Griffiths, 2008).

In the same context, Dewaele and Furnham (1999) revised nearly 30 studies of personality and point out that extraverts have a great reputation for being more fluent than introverts in both L1 and L2, but are not necessarily more accurate in their L2. This indeed strengthens the concept that fluency and accuracy are different extents in second language acquisition. The proficiency level of oral communication, in particular, is an indication of Extraversion advancement. Various studies have also concluded that extraverts are ahead of introverts in verbal learning tasks (short-term recall tasks) that require short-term memory. MacIntyre et al (2007) introduced the influence of the learning situation. Introverts, for instance, were found to perform better if they study in a very familiar situation, whereas extraverts are likely to perform best in a moderate degree of novelty.

Pfister (2000), also, examined bilingual college students in the United States to understand the influence of personality type on English reading comprehension. His results stated that extraverted perceiving types achieved higher scores in interpretive comprehension sections whereas Sensing Feeling types performed better in literal comprehension items. Sensing types faced more difficulties in reading learning, confronting traditional standards of academic achievement and setting for standardised (timed) tests. Likewise, Sharp (2002) examined thoroughly the influence of text structure on reading comprehension, via cloze test procedure. The results showed that 'description' was the easiest text structure for all groups of both genders compared to the other text structures (problem-solution, listing, and cause-effect). Altogether, it is assumed that introverts might do better in written tests compared to extraverts who are inclined to perform better in oral tasks. Extraverts are generally more likely to perform faster but less accurately in complex cognitive tasks, while introverts tend to be slower but more accurate (Robinson et al, 1994).

2.2. Theories of Personality and Reading

The present research applies the following theories: Carl Jung's 'psychological types theory' or model of typology (1923), Hans Eysenck's approach of 'biological basis of personality' (1964) and Rumelhart's (1977) interactive model of reading comprehension.

Over years, personality theorists and researchers have tried to define, to understand and to examine the variety of human traits. The observed human behaviour implies some conceptual elements (constructs) such as immaterial human dimensions, types, and characteristics. Extensively studied personality constructs include anxiety, hostility, emotionality, motivation, and Introversion-Extraversion (Sarason, 2019).

Starting with Jung's theory, there are eight typological groups, two personality attitudes; Introversion and Extraversion, and four functions (modes of orientation) that operate in an introverted or extraverted way, and these are Thinking, Sensation, iNtuition and Feeling. Introversion and Extraversion are the psychological ways of adaptation in which energy is directed towards the inner world in Introversion and towards the outer world in Extraversion. In the extraverted manner, outside elements are the transcendent rousing power for judgments, perceptions, feelings, influences and activities. This forcefully appears differently in the psychological nature of Introversion, where interior or subjective elements are the main inspiration. As for the modes of orientation (Thinking, Sensation, Feeling and iNtuition), the Thinking function refers to the procedure of cognitive thought; Sensation is perception through physical sense organs; Feeling is the function of personal judgment or valuation; and finally, iNtuition refers to an unconscious perception (Sharp, 1987). Nevertheless, it is vital to bear in mind that the Extraversion-Introversion dimension is a continuum and there is no definite extravert or introvert: "[T]here can never be a pure type in the sense that it possesses only one mechanism with the complete atrophy of the other" (Jung, 1973, p.2066).

Going beyond personality attitudes and orientation, a profound approach by Hans Eysenck (1981) explores the biological basis of personality in which introverts carry out high levels of arousal in the autonomous nervous system and in the cortex. In contrast, extraverts have much lower levels of arousal. Since human functions require a moderate level of cortical arousal, the under-aroused extravert is prone to external stimulation to reach the optimal level, when the over-aroused introvert tries to avoid over-arousing situations since they receive adequate internal stimulation (Dewaele & Furnham, 1999; Strelau, 1984). Eysenck's main biological perspective of personality is a neurological construction known as Ascending Reticular Activation System (ARAS) which is a set of nerve fibres situated at the base of the spinal cord and the lower section of the brain. This system helps in adjusting the level of arousal in the brain to allow the individual to work most effectively. Introverts have a lesser doorway of arousal (higher levels of activity) in the ARAS than do extraverts. The ARAS either lowers or raises the level of arousal depending on the feedback the brain receives from different situations.

For Eysenck (1981, as cited in Dewaele & Furnham, 1999), a typical extravert is sociable, likes parties, enjoys working or learning in groups, desires excitement and takes chances, generally seeks change, is carefree, easy-going, and optimistic, tends to be aggressive and easily loses his/her temper, not always reliable and his/her feelings are not under tight control. In contrast, a typical introvert is quite a reserved kind of person, introspective, affectionate about books rather than people, has few intimate friends, prefers planning ahead, takes everyday life matters seriously, likes well-organised mode of life, rarely behaves aggressively and does not easily lose his/her temper, is mostly reliable and sets great values by ethical standards.

On the basis of reading comprehension, psychologists have identified two kinds of cognitive processing: bottom-up process in which stimuli is taken from the outside world (i.e., letters and words), and top-down process in which the process of information is directed by an individual's prior knowledge and expectations (Treiman, 2017). The same processes apply to reading comprehension. In fact, Carrell and Eisterhold (1983) and Eskey (1988) stated that reading comprehension cannot occur properly with only one of those cognitive processes, that is, either bottom-up or top-down processing. Therefore, both models bottom-up and top-down should be applied. The bottom-up model confirms the reader's anticipation about the text whereas top-down processing helps to solve ambiguities or picks up explanations from the text. The interactive model, first proposed by Rumelhart (1976), states that a pattern is created based

on information delivered simultaneously from numerous sources. According to this model, reading requires both higher mental operation and lower text processing. In other words, both bottom-up and top-down approaches are fundamental for the completion of reading tasks. In a classroom setting, Entwistle et al. (1979) proposed that the chosen styles of readers may be either data-driven or reader-driven. From the interactive perspective, reading comprehension is believed to involve an interactive processing of two substantial elements of the reading components: text and the readers' background knowledge (Yang, 2007).

2.3. Research Questions

The current study tries to shed the light on the relationship between MBTI profiles and the L2 reading proficiency of Arab undergraduates. Specifically, address the following questions;

(1) What is the relationship between students' personality attitudes, Introversion/Extraversion and their L2 reading proficiency, and whether any of Introversion/Extraversion profiles performed better?

(2) Which of the MBTI function pairs that represent the highest scores of L2 reading proficiency?

3. Methods

3.1. Sample / Participants

A random sampling on a group of volunteers was applied in this research. As personality assessment tools are costly, only 50 students were chosen for the present study ($n = 50$). The volunteers were all male undergraduates in their second year in Business Administration College at Taibah University, Madinah (Saudi Arabia). Students in the sample received class credit for their participation. Participants were aged between 18 and 25 and had been learning English for at least seven years. Student's English proficiency level ranged between 68% and 70% and exemplified a pre- intermediate to intermediate level. The selection of low proficient sample in the present study was purposive. The researcher wanted to identify the proficient students among their intermediate counterparts and examine their personality types.

3.2. Instruments

The current research adopted two measurement tools; The Myers-Briggs Type Indicator (MBTI) as a personality assessment tool and TOEIC Bridge as a reading test.

3.2.1. The Myers-Briggs Type Indicator. Different models of personality, such as Eysenck's model of personality, the Five-Factor Personality Model and the Myers-Briggs Type Indicator, have been developed by educational psychologists and clinical psychiatrists for researchers to apply in different fields. These measuring instruments aim to transform the abstract concept of personality into a measurable unit. Such models are valid and widely and diversely used. However, the personality instrument chosen for this study, Myers-Briggs Type Indicator (MBTI), is the most appropriate for two major reasons. First, MBTI serves the main objectives and predicts answers to the proposed research questions. Second, MBTI is a powerful personality tool as it is theory-based. According to McCaulley (2000), the related issues of translation and cultural effects affected the use of MBTI and multicultural applications are in the initial stages, yet, the Jungian types are remarkably alike worldwide.

According to The Myers and Briggs Foundation (n.d.), MBTI is a personality inventory that attempts to make Jung's psychological types theory comprehensible and applicable in people's lives. The spirit of this theory is much related to the basic variances in which people prefer to use their perception and judgment. MBTI four-letter formula marks the dynamic

interaction between the four preferences. Scores are calculated through an Introversion/Extraversion scale; thus, one choice is based on Introversion preference and the other is measured according to an Extraversion approbation (Salkind, 2007). For example, ISTJ gives a short description of the correlation of the four processes where the first and the last letters (I and J) represent the attitudes and orientations (interactions with the world). The two middle letters ST are called function pairs and they represent the mental functions as they ground much of the brain's work (The Myers & Briggs Foundation, n.d.).

MBTI Form M, used in this research, is tested across various samples on popular demographics such as employment status, ethnicity, age, and country or region of origin. Also, Test-Retest Reliability investigated the score consistency of completing the same assessment at two distinct times (Schaubhut et al., 2009). A number of educators and researchers doubted MBTI reliability (McCarley & Carskadon, 1983; Sternberg & Grigorenko, 1997; Clark & Estes, 2002 and Pittenger, 2005). However, most of the criticisms targeted the earlier versions of MBTI. For the most part, the addressed issue is that MBTI users may not have experienced other personality assessments to estimate their reliability. On the grounds that the MBTI personality inventory is highly based on Jung's psychological type's theory, its validity is established by the explanation of relationships and outcomes predicted in Jung's theory (Tyagi, 2008). latest Arabic version of the MBTI Form M questionnaire containing 93 forced-choice items framed either as words or statements was adopted in this study.

3.2.2. TOEIC Bridge. Literacy assessment tools demonstrate the proficient and deficient skills of students in terms of literacy. They also help to monitor a learner's progress and reveal where additional support is required. The TOEIC Bridge test is an English proficiency test developed by Educational Testing Service (ETS) and established for people whose native language is not English. It was designed for beginning level to lower-intermediate level English learners. The TOEIC Bridge reading test is a short (compared to normal TOEIC test) multiple-choice test that contains 50 items which was developed to accurately assess the reading proficiency of intermediate level English learners (A1 to B1). This test yields to the ETS standards of Quality and Fairness to confirm its high reliability for assessing English proficiency regardless of gender, age, nationality, and test taker industry background. ETS guarantees that all of the TOEIC products are not offensive or controversial; do not reinforce stereotypical views of any group; are free of racial, ethnic, gender, socioeconomic, and other forms of bias; are free of content believed to be inappropriate; and/or are not derogatory towards any group (Educational Testing Service, 2011).

In their attempt to examine evidence of the validity of TOEIC Bridge scores, Powers and Yan (2013) examined 2,315 participants from Japan and Korea to grasp the link between TOEIC Bridge scores and students' self-assessments of their own English-language skills in everyday language tasks. The evaluated reliability (coefficient alpha) was between .96 and .97 for the listening and reading sections of each country. Their findings displayed statistically significant convincing evidence of the validity of the TOEIC Bridge test as an indicator of English-language proficiency. The reliability of the TOEIC Bridge is tested through an internal consistency measure which uses the KR-20 reliability index. The KR-20 reliability index evaluates the dimensions where all items measure the same construct. The reliability of the TOEIC Bridge Listening and Reading section scores across all forms was approximately 0.85 (Educational Testing Service, 2011).

TOEIC Bridge is a paper-and-pencil, multiple-choice test which contains 100 questions divided into two main sections: Listening and Reading. The reading section includes 50 reading questions, diversified from single sentences to plain texts. This section splits into two parts: 30

incomplete sentences and 20 reading comprehension questions. The second section includes notices, emails, tables, charts and advertisements (Rilcy, 2008).

In the present study, the average English proficiency level for the L1 Arabic business undergraduates was calculated based on two English courses (ENGL105 and ENGL106) the sample completed in the past two years. Students' English proficiency percentages ranged between 68% and 70% in both courses which in turn emphasised their 'intermediate' level (B) and that justified the suitability of the TOEIC Bridge reading test. A brief background information form (name, age, and field of study) was attached to the TOEIC Bridge test. Subjects were also asked to mention whether they had sat for any standardised tests within the last two years. Being used to similar tests would make students setting for this test less reliable. Two students were excluded as they sat for similar standardized test. TOEIC Bridge reading test and answer keys were adopted from 'Achieve TOEIC Bridge' (Rilcy, 2008). Reading scores were calculated based on the number of correct answers and there was no penalty given for wrong answers. Each correct answer was given one point, so, the scoring scale ranged from 1 to 50

3.3. Data Collection Procedures

In a classroom setting, participants first completed the MBTI personality questionnaire which took them approximately 30 minutes to complete. A break of 10 minutes followed. Then, participants answered the 50-item TOEIC Bridge reading test in 35 minutes. Instructions were provided in both tests to ensure a smooth procedure.

Table 1. MBTI distribution among sample.

Personality Types	Frequency	Percent (%)
INFJ	1	2.0
ISFJ	1	2.0
ISTJ	6	12.0
INTP	3	6.0
INFP	5	10.0
ISFP	8	16.0
ISTP	6	12.0
ENFP	7	14.0
ESFP	4	8.0
ESTP	2	4.0
ENTJ	1	2.0
ENFJ	1	2.0
ESFJ	4	8.0
ESTJ	1	2.0
Total	50	100

INFJ=Introverted-iNtuitive-Feeling-Judging
ISFJ=Introverted-Sensing-Feeling-Judging
ISTJ=Introverted-Sensing-Thinking-Judging
INTP=Introverted-iNtuitive-Thinking-Perceiving
INFP=Introverted-iNtuitive-Feeling-Perceiving
ISFP=Introverted-Sensing-Feeling-Perceiving
ISTP=Introverted-Sensing-Thinking-Perceiving

ENFP=Extraverted-iNtuitive-Feeling-Perceiving
ESFP=Extraverted-Sensing-Feeling-Perceiving
ESTP=Extraverted-Sensing-Thinking-Perceiving
ENTJ=Extraverted-iNtuitive-Thinking-Judging
ENFJ=Extraverted-iNtuitive-Feeling-Judging
ESFJ=Extraverted-Sensing-Feeling-Judging
ESTJ=Extraverted-Sensing-Thinking-Judging

4. Findings

Before attempting to examine the research questions, an exploration on the sovereignty of personality types (according to the MBTI) represented in our sample is requisite. The table below (Table 1) presents a descriptive statistics of MBTI profiles of 50 male business undergraduates. It is interesting to note that Introversion was observed to be the dominant personality type that is, a total of 60% of the participants were introverts, compared to 40% who were extraverts.

The data analysis also showed that Introversion and Extraversion were approximately normally distributed in the present sample, with skewness of -0.520 (SE = 0.427) and a kurtosis of -0.703 (SE = 0.833) for the introverts, and a skewness of 0.528 (SE = 0.512) with a kurtosis of -1.531 (SE = 0.992) for extraverts.

Of the introverts, the Introverted-Sensing-Feeling-Perceiving (ISFP) type represented the most number, that is, eight out of 30 participants. Of the extraverts, the Extraverted-iNtuitive-Feeling-Perceiving (ENFP) type showed the highest number, that is, seven out of 18 participants. As shown in Table 1, the top half of the table indicates that ISFP, ISTJ, and ISTP types represent the most common introverted personality types. The bottom half of the table shows that ENFP, ESFP, and ESFJ types embody the common extraverted personality types in the present sample (for a discussion, see Medjedel, 2016).

4.1. Introversion/Extraversion and L2 Reading Proficiency

First, a test of normality was run to check whether the English (L2) reading scores were normally distributed for both Introversion/Extraversion types. The null hypothesis for the test of normality is that the data are normally distributed, and the null hypothesis is rejected if the p-value is less than 0.05. Test of normality statistics showed that the p-value was 0.189 for Introversion and 0.283 for Extraversion, and both values were above 0.05. Therefore, the null hypothesis is accepted. Regarding skewness and kurtosis, the data were a little skewed and kurtotic for Introversion/Extraversion, but the results did not differ significantly from normality. Regarding the Shapiro-wilk test (Shapiro & wilk, 1965), it can be assumed that the data were approximately normally distributed with skewness of 0.519 (SE = 0.427) and a kurtosis of -0.432 (SE = 0.833) for the introverts, and a skewness of 0.737 (SE = 0.536) and a kurtosis of 0.225 (SE = 1.038) for extraverts.

TOEIC Bridge reading scores ranged from 8 to 35 (M = 19.42, SD = 6.76). The highest score is 35 (70%) while the lowest score is 8 (16%), and the most frequent score is 13 (26%) as illustrated in the bar chart (Figure 1).

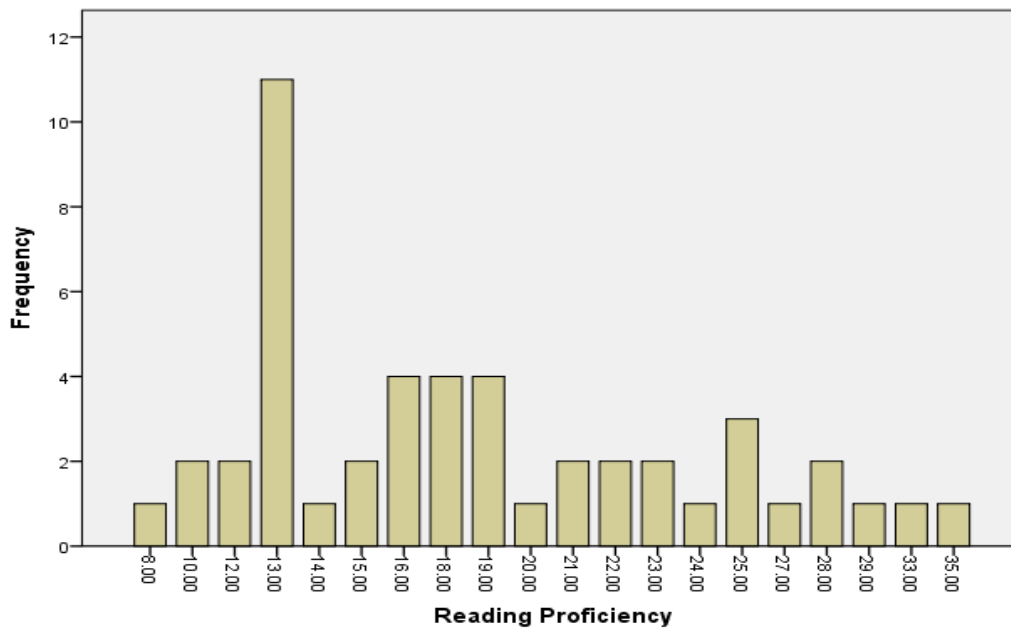


Figure 1. Frequency of TOEIC bridge scores.

Next, the TOEIC Bridge reading scores of the participants were analyzed via Pearson's correlation coefficient to determine the relationship between reading proficiency and personality types. The evidence used to reject H_0 is the p-value that should be below $\alpha = 0.05$ (Elliott & Woodward, 2007). The results of this study indicated a statically non-significant negative correlation of $r(46) = -0.18$, where r = Pearson coefficient, degree of freedom (df) = $n(48) - 2$, and $\alpha = 0.05$.

In other words, Pearson's correlation coefficient indicated that there was no significant linear relationship between personality types and L2 reading proficiency. For these data, the mean (SD) for personality types was 8.13 (3.57) and for reading proficiency was 19.42 (6.77). The correlational analysis is displayed in Table 2.

Table 2. Correlation between reading proficiency and personality types.

Reading Proficiency	Personality Types
Pearson Correlation	-0.182
Sig. (2-tailed)	0.215

However, a comparison of Introversion ($n = 30$) and Extraversion ($n = 18$) revealed a slight positive correlation between Extraversion and reading proficiency compared to Introversion, as illustrated by the data in Table 3. Table 3 presents the Pearson's correlation coefficients of Introversion and Extraversion as related to reading proficiency. Even though, p-value for both types still showed a non-significant correlation between Introversion/Extraversion and L2 reading proficiency ($p = 0.45/p = 0.22 > 0.05$). Participants with Extraversion type showed positive correlation to L2 reading proficiency; $r(16) = 0.19$ compared to Introversion type; $r(28) = -0.23$.

Table 3. Correlations between reading proficiency and introversion/extraversion

Reading Proficiency	Introversion	Extraversion
Pearson Correlation	-0.229	0.224
Sig. (2-tailed)	0.191	0.448

4. Function Pairs and L2 Reading Proficiency

As Introversion/Extraversion preferences stress the source of energy and the way of dealing with the outer world, function pairs (NT, ST, NF and SF) address the mental operations and cognitive functions used when making decisions and gathering information. Since the reading test used here was based on choice, it is very logical to consider the MBTI function pairs that represent mental functions. These mental functions are applied when participants are faced with a given information and/or questions in the reading test; they have to gather and interpret information, then make appropriate decisions based on that interpretation.

Given that the maximum reading score was 35 and the minimum was 8 in the present sample, the results of the descriptive analysis indicated that the highest scores of TOEIC Bridge reading test were signified by the NT (iNtuitive-Thinking) function pair with a mean (SD) of 27.7 (4.3). The three of the NT holders were introverted students. Out of the total number of 48 participants, 13 were NF (iNtuitive-Feeling) holders with a mean (SD) of 19.31 (1.75); 17 of them were SF (Sensing-Feeling) holders with a mean (SD) of 19.49 (1.60); and 15 of them were ST (Sensing-Thinking) holders with a mean (SD) of 18.07 (1.73).

The boxplot in Figure 2 (below) presents a visual description of the variability of the function pairs. These boxplots are split with a central tendency, median and limited by Whiskers (T-lines) that show the highest and lowest scores obtained. It can be seen that there are distinct differences between the four groups. NF and SF boxplots seem to have similar median values (19) that are slightly higher than the median (18) for ST, but the three groups vary in scores. The most significant median value here is that of NT, which equals 28, and the group scores are higher than the other function pairs. In particular, the NT box shows that the students' reading scores range between 31 (upper quartile) and 24 (lower quartile) where the whiskers represent the highest score of 35 and the lowest score of 20. The NF box shows that the students' reading scores range between 24 (upper quartile) and 14 (lower quartile) where the whiskers represent the highest score of 33 and the lowest score of 12. The SF box indicates that the students' reading scores range between 23 (upper quartile) and 13 (lower quartile) where the whiskers represent the highest score of 32 and the lowest score of 8. The last box of ST shows that the students' reading scores range between 19 (upper quartile) and 13 (lower quartile) where the whiskers represent the highest score of 35 and the lowest score of 10.

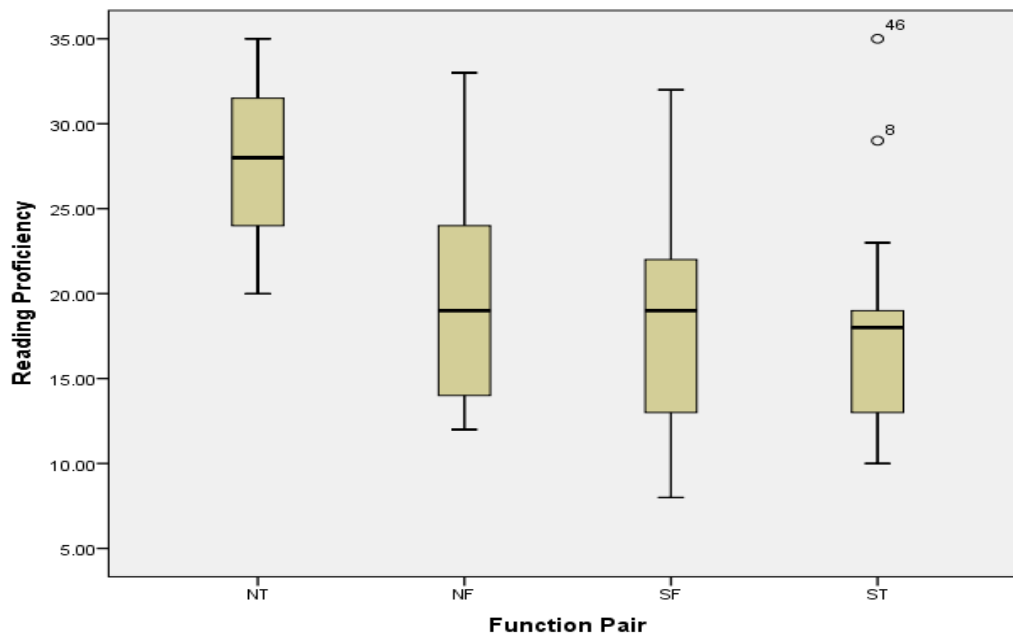


Figure 2. Function pairs and l2 reading proficiency.

5. Discussion

The present study did not find significant evidence to judge whether personality has substantial effect on L2 reading proficiency of Arab university students. Contrary to expectations that were based on some of the existing literature (Robinson et al., 1994; Ellis, 2004), this study did not find any significant relationship between L2 reading proficiency and personality. These results do not support much of the previous research such as the study by Chamorro-Premuzic and Furnham (2003) whose findings revealed a significant relationship between personality and academic performance. Sadeghi et al. (2012), and others such as Blicke (1996), Diseth (2003), went further and considered personality as a principal factor in which students' learning styles and learning performance are related to achieving the academic goals. They also observed personality variables as moderators in the learning process.

The results of the present study, however, are consistent with the data obtained in Ehrman and Oxford's (1995) study that investigated the relationship between individual differences and language learning variables, and their findings showed no significant association between extraverts and the written Modern Language Aptitude Test scores. When Carrel et al. (1996) also examined the relationships between the personality types and different methods of academic performance. There was no correlation between Extraversion and L2 reading comprehension.

Nevertheless, other observations should be considered in the current literature to bring off a complete image. Here are some potential explanations for the study findings;

- Minor advantage of extraverts: a possible explanation for the slight excellence of Extraversion types over some language aspects is that extraverts have different cortical blood flow patterns from introverts (Stenberg et al., 1993) and they display excessive relative activation of the brain's left hemisphere (Berenbaum & Williams, 1994). Now that the left hemisphere is believed to stock the main language components, this may have linguistic significance, that is, in language learning and acquisition.

- L2 reading: the contradictory findings regarding the relationship between Extraversion and Introversion types and reading, in this case, L2 reading, might be related to the different physiological basis for introverts and extraverts that were explained by Eysenck (1964, 1990). Based on this relationship, the arousal hypothesis (Eysenck, 1964), which is supported by a considerable amount of evidence (Eysenck, 1990; Stelmack, 1997; Matthews & Gilliland, 1999), suggests that introverts should react with greater responsiveness than extraverts alongside the physiological processes regulated by the ARAS. Since introverts are already somehow more aroused, they should react faster and to a higher degree than extraverts to the different forms of external stimulation (Carducci, 2009). This fact further gives a logical basis for extraverts to be more competent in tasks that require external stimulation, such as verbal communication, and introverts to be better in tasks that are more related to privacy and solitude, such as writing and reading.
- Memory: memory function is vital in reading, Eysenck (1981) determined that introverts require a longer time to recapture information from the permanent storage (long term memory). Lieberman (2000) further suggested that extraverts have better working memory skills than introverts. Eysenck (1981) rationalised this difference to be due to the over-arousal of the introverts that may disturb their parallel processing. Therefore, introverts are “at a disadvantage in any task ... involving the processing of several different items of information” (Eysenck, 1981, p.203), while extraverted individuals tend to have better short-term memories as they have lower cortical arousal (Cox-Fuenzalida, et al., 2006).
- Timing: In general, extraverts are more likely to carry out tasks faster but show less accurate performance in complex cognitive tasks, while introverts tend to be slower but more accurate (Eysenck et al., 1985).

Overall, Introversion and Extraversion preferences might be more significant in the learning process, that is, as a part of the learning styles they adopt. Physiological underpinnings (i.e., cortical blood and brain arousal) also seem to be consistent in the way they explain the different characteristics of personality types and their contribution to language performance. However, the findings of the current study showed no significant statistical relationship between personality and reading proficiency, contrary to the results of many other studies discussed above.

Notably, an investigation of the function pairs of both types showed that NF personalities (13) achieved higher scores in the TOEIC Bridge test than did the SF preferences (17). Also, NT profiles outperformed ST profiles, yet still weak finding due to the gap in group numbers. (NT=3, ST= 15).

Taken together, Myers and Myers (2010) stated that NT and NF personalities are gifted in seeking out a wider context, patterns and meaning since they emphasize concepts, ideas and theories as they put facts into meaningful contexts and are effortlessly able to determine possibilities. In contrast, Sensing types, both Thinking and Feeling (ST/SF), scored less in the same reading test. This could be due to their different way of collecting information and making decisions. Further, Pfister’s (2000) research on the effect of personality type on English reading comprehension for US bilingual college students argued that NT students obtain higher scores in interpretive comprehension sections whereas SF types perform better in literal comprehension items.

Most of the participants (32 out of 48) of the current study seemed to possess Sensing preferences. Whether Thinking (rational process) or Feeling (values consideration) preferences were applied, both types rely on and prefer to make full use of senses rather than considering

and accepting theoretical, abstract or hidden concepts. This concept, probably, justifies the low reading scores of both the Sensing types SF and ST, compared to NT and NF. This is because the TOEIC Bridge reading test contains two sections that address different aspects of reading ability. The first section, from question 1 to 30, contains incomplete sentences which are direct and easy to answer. The second section, however, consists of notices, email, invitation and chart which all require comprehension and participants need indirect/complex information recall. Sharp's (2002) study on the influence of text structure on reading comprehension showed that 'description' was the easiest text structure for all groups of both genders compared to the other text structures such as problem-solution, listing, and cause-effect. Thus, different personality types are likely to perform differently in different reading text types.

6. Conclusion

Overall, the results obtained in the present study provide insights into the contradictory area of personality and language learning. Being one of the few studies in the Arab region that used MBTI in the academic field, this research serves as a base for future researchers, especially those who are interested in L2 English and literacy.

As with all scientific research, our study encountered some limitations which need to be considered. First, only one gender (male) was chosen as both genders are parted in most Saudi universities and administrating both separately while guarantying a standard quality seemed unmanageable. Second, both assessments have been conducted in a single session due to time and place constraints. Third, some variables were not examined in depth such as reading performance and proficiency levels over a longer period. Finally, the study is exploratory, as it only examined the reading proficiency of the participants at the time of data collection.

7. Directions for Future Research

Since the current findings added more uncertainty to the past studies in the field, further research is needed to examine the relationship between personality and language learning and achievement. This study recommends that the following should be explored as future research strategies; other variables that could influence L2 reading proficiency, such as reading strategies, reading skillfulness outside the classroom, age, and most importantly L1 reading proficiency. Such variables should be included in future studies of personality type and achievement. A broader and more diverse sample that includes both genders is highly recommended. In addition to self-report personality assessment, observing character behavior in the classroom would strengthen the data obtained. An experimental research to examine the correlation between personality and reading proficiency is advisable where pre/post reading tests are applied with a personality tutoring for both learners and language instructors. Finally, future research should include statistical inference to determine whether function pairs' observed differences could stem merely from chance.

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