IJPES
www.ijpes.com
International Journal of Psychology and Educational Studies
ISSN: 2148-9378

The Relation of Metacognition, Personality, and Foreign Language Performance

Nesrin ÖZTÜRK[1]

[1]*Democracy University, Department of Educational Sciences, Izmir, Turkey* *0000-0002-7334-8476*

ARTICLE INFO

Article History
Received 14.12.2020
Received in revised form 28.03.2021
Accepted 17.05.2021
Available online: 25.07.2021
Article Type: Research Article

ABSTRACT

Metacognition is a significant predictor of learning and academic performance, including foreign-language performance. However, variations in metacognitive competence can be observed due to several factors, potentially including personality. Analytic survey research methods were implemented to examine the relation between metacognition and personality traits and their interaction with foreign-language performance. Data were collected from 244 participants via the Turkish Metacognitive Awareness Inventory, Basic Personality Traits Inventory, and records of foreign language performance grades. Spearman's correlation and multiple linear regression tests were used for data analysis. Results confirmed that Conscientiousness, Openness to Experience, and Agreeableness explained 20% of metacognitive knowledge, and 16% of metacognitive regulation was attributed to Conscientiousness and Openness to Experience. Compared to other language skills, it was merely reading performance correlating with metacognitive knowledge and metacognitive regulation. On the other hand, language use was positively correlated with metacognitive regulation. Regression analyses identified that only personality traits but not metacognition predicted foreign-language performances. Conscientiousness and Extraversion predicted reading performance, and Conscientiousness and Openness to Experience were significant predictors of language use performance. These findings may suggest that personality influences foreign language reading performance, language use performance, and metacognition. Therefore, pedagogical implications may reflect individual differences, especially when delivering foreign language instruction or metacognition training modules.

Keywords:[1]
metacognition, personality, Five Factor Model, reading performance, foreign language performance

1. Introduction

Some foci need allocation to individual differences regarding cognitive, behavioral, and/or affective domains in education. Such an emphasis is necessary to understand and scaffold learners' experiences and interpret learning outcomes. Schwab's (1978) explanation of education can be referred to recognize the impacts of individual differences. According to Schwab (1978), education teaches *something* to *someone else* in *some context* (Alexander, Murphy, & Greene., 2012, p. 17 emphasis in original). In this definition, *someone* may be teachers or peers doing teaching. On the other hand, *something* might refer to the content or *learning how to learn* as Alexander, Murphy, and Greene (2012) highlighted. *Someone else* refers to learners and *some context* can be defined as the nature or the climate of the classrooms (Alexander et al., 2012).

Alexander et al. (2012) noted that these education variables are not additive, but multiplicative; 'Education=Someone x Something x Someone else x Some context' (p.19). For this reason, variations in any factors produce variations in educational outcomes. That is, although the same teacher teaches learners the

[1] Corresponding author: Democracy University, Department of Educational Sciences, Izmir, Turkey
e-mail: ozturknesrin@gmail.com
Citation: Öztürk, N. (2021). The relation of metacognition, personality, and foreign language performance. *International Journal of Psychology and Educational Studies, 8*(3), 103-115.
https://dx.doi.org/10.52380/ijpes.2021.8.3.329

same topic in the same classroom, variations that relate to, for example, expectations, predispositions, capabilities, or experiences in *someone else* can produce distinctive learning experiences and/or outcomes.

1.1. Problem and Purpose of the Research

Metacognition is an essential tool for learning (Fisher, 2002; Kerndl & Aberšek, 2012) and it is also a significant predictor of learning (Veenman, 2016). Metacognition helps individuals manage cognitions strategically and efficiently (Gourgey, 1998) by improving 'reading comprehension, writing, language acquisition, attention, memory, problem solving' (Flavell, 1979, p. 906). Learners, however, may show variations in metacognitive adequacy because of the differences in social interactions, opportunities of acquiring metacognition, and attitudes to obtain such a repertoire (Veenman, Van Hout-Wolters, Afflerbach, 2006)

While some individuals might be metacognitively competent, some might lack sufficient adequacy to perform metacognition or lack it al all. Veenman et al. (2006) argued that some individuals may 'spontaneously pick up metacognitive knowledge and skills to a certain extent' (p.9) from individuals around them. Some others might develop such competencies on their own. However, there might be some individuals who suffer from availability or production deficiency of metacognition. Individuals with availability deficiency do not possess sufficient amount of metacognitive knowledge and cannot exercise regulatory strategies effectively. On the other hand, individuals with production deficiency might have some amount of metacognitive knowledge or skills. However, they fail to manage metacognitive regulation for various reasons, including, for example, anxiety, task-difficulty, lack of motivation, or inability to see the relevance of metacognition in different situations (Veenman et al., 2006).

While research examined relations between metacognition and academic achievement as presented in the following section, an understanding of the relation between individual differences (i.e. personality) that students bring to the classroom and metacognition is limited. Regarding Duff, Boyle, Dunleavy, and Ferguson's (2004) argument that personality may partially determine individuals' orientations and approaches to learning, this study hypothesized that some personality traits might help determine metacognitive competency. Also, as learning orientations or approaches can be a learnt component of personality (Furnham et al., 1999), cognitive performances (i.e. foreign language skills' performance) might be indirectly predicted by metacognition and directly by personality traits. For these hypotheses, the following questions will be answered in this study;

1. Is there a relation among metacognition, personality traits, and foreign language skills performance scores?
2. To what extent do personality traits and metacognition predict foreign language performance scores, if at all?

1.2. Literature Review

1.2.1. Metacognition

Metacognition pertains to thinking about thinking (Flavell, 1979; Veenman et al., 2006). According to Flavell (1979), actions and interactions of metacognitive knowledge and metacognitive regulation control cognitions during metacognitive experiences. Metacognitive knowledge includes variables about thinking and sensitivity to think accordingly. Precisely, it consists of individuals' knowledge about *self, task demands*, *goals*, *resources*, and *strategies*. Such knowledge pertains to individuals' knowledge about;

- Who they are in the specific context of task demands, available resources, and goals,
- What is available for them and/or what their capabilities are to tackle task demands,
- What they aim for,
- What the task requires them to do,
- Whether and how they can manage resources to fulfill task demands and/or attain goals,
- Whether and how they manage appropriate strategies to achieve task demands and/or goals, and
- Why they engage in all these endeavors (Ozturk, 2017).

The previous component of metacognition help individuals judge and take the initiative to regulate their cognitive performances (Flavell, 1979; Veenman, 2016). On the other hand, metacognitive strategies enact regulatory mechanisms over cognitions for successful mastery of task demands or achievement of

performance goals (Baker & Brown, 1984; Kuhn, 2000). This aspect pertains to the strategies of planning, monitoring cognitions, regulating strategies, and evaluating one's performances or goal attainment. Metacognitive knowledge and regulation can be practised via metacognitive experiences. Flavell (1979) defined metacognitive experiences as conscious intellectual enterprises usually accompanied by highly conscious thinking. These are the mechanisms that modify metacognitive knowledge and help individuals activate regulatory strategies for cognitive endeavours.

1.2.1.1. Metacognition and academic achievement. Flavell (1979) emphasized metacognition's importance for cognitive endeavours. After his initial arguments, research confirmed that metacognition impacted learning or achievement positively (e.g. Desoete, Roeyers, & Buysse, 2001; Klingner, Vaughn, & Schumm, 1998; Michalsky, Mevarech, & Haibi, 2009; Muñiz-Swicegood, 1994; Van Keer & Vanderlinde, 2010). Indeed, it can be a significant distinction between high and low achievers (Paris et al., 1984; Pogrow, 2004). Moreover, the research provided evidence that metacognition can be taught (e.g. Cross & Paris, 1988; Takallou, 2011; Tanner, 2012; Zhang & Seepho, 2013). Following such training, students' awareness, responsibility-taking, and performances might improve significantly (Boulware-Gooden, Carreker, Thornhill, & Joshi, 2007; Cross & Paris, 1988; Curwen, Miller, White-Smith, & Calfee, 2010; Veenman et al., 2006). However, such training might not affect all learners in the same way (Ozturk & Senaydın, 2019). They found that highly proficient foreign language learners might benefit from metacognition training most when compared to low or average proficient language learners.

1.2.2. Personality

Cognition pertains to what individuals can do and personality traits can reflect what they will do (Furnham & Chamorro-Premuzic, 2004). Personality pertains to relatively stable and essentil aspects of the self (Maltby et al., 2007). The Five Factor Model (FFM) of personality studies variations among individuals regarding consistent cognitive, emotional, and behavioural patterns (Gençöz & Öncül, 2012). To McCrae and Costa (2003), traits are degrees of variation across dimensions hieratically organized and impacted by the native language.

Well-known FFM personality dimensions include Extraversion, Agreeableness, Conscientiousness, Openness to Experience, and Neuroticism (Goldberg, 1990, 1993). Extraversion is defined via positive affectivity and social interactions, whereas Extraverts are sociable, fun-loving, affectionate, friendly, and talkative and enjoy others' company. Agreeableness is also characterized by high quality in social interactions and social support. It is associated with trust, altruism, empathy, kindness, and affection. Agreeable individuals are cooperative rather than competitive and even manipulative. On the other hand, Conscientiousness signifies goal-directed behaviour and strategies to handle frustration during task completion. It is characterized by adjectives such as hardworking, ambitious, energetic, and persevering. Such individuals are self-disciplined, well-organized, goal-oriented, and habitually careful. Moreover, Openness to Experience can reflect the flexible part of the personality, and it can be associated with self-esteem and positive affect. Openness to Experience can be characterized by originality, imaginativeness, broad interest, and daring nature. Such individuals might tend to see themselves as more intelligent and interestingly others might also think about them, so (Gençöz & Öncül, 2012; Goldberg, 1990, 1993; Mccrae & Costa, 1987). Neuroticism, on the contrary, is associated with (a) psychological distress such as worrying, feeling insecure, self-conscious, (b) negative affectivity such as anxiety, depression, anger, and embarrassment and (c) maladaptive coping strategies like hostile reactions, wishful thinking, mistrust, smoking, overeating, or drinking excessively. Neuroticism might include not only negative effect but also distributed thoughts and behaviours accompaning emotional distress. This study uses a Turkish personality inventory regarding the lexical hypothesis; therefore, another dimension -Negative Valence- needs some explanation. It is an aspect that contributes to psychological well-being negatively, like Neuroticism. Gençöz and Öncül (2012) argued that Neuroticism is closely related to distress and anxiety, whereas Negative Valence pertains to self-worth (see Table 1).

Table 1. *Personality Traits and Characteristics*

Personality traits	Characteristics
Extraversion	*Positive affectivity & Social interactions* Sociable, fun, loving, affectionate, friendly, and talkative
Agreeableness	*Social interactions & Social support* Trust, altruism, empathy, kindness, cooperation, and affection
Conscientiousness	*Goal-directed behavior & Use of strategies* Hardworking, ambitious, energetic, self-disciplined, well-organized, careful, goal-oriented, and persevering
Openness to Experience	*Self-esteem & Positive affect* Original, imaginative, broad interest, daring
Neuroticism	*Negative affectivity, Psychological or emotional distress & Maladaptive coping strategies* worrying, feeling insecure, self-conscious, anxiety, depression, anger, and embarrassment, hostile reactions, wishful thinking, mistrust, smoking, overeating, or drinking excessively.
Negative Valence	*Negative well-being* Low self-worth

1.2.2.1. Personality and academic achievement. Personality can play a role in developing knowledge and academic performance (Chamorro-Premuzic & Furnham, 2003a). That is, learners' choices, level of persistence, and engagement in intellectually stimulating activities may be directed by personality traits (Chamorro-Premuzic & Furnham, 2003b).

Previous research provided some divergent evidence for the relation of personality traits and academic performance. Few personality traits were either positively (i.e. Conscientiousness and Openness to Experience) or negatively (i.e. Neuroticism) correlated with academic achievement. However, the relation between other personality traits and academic achievement were inconsistent. Agreeableness and Extraversion did not correlate with academic achievement. When they were correlated with academic achievement, the direction of the correlation was controversial, as presented in the following.

Similar to the findings of a meta-analysis study done by O'Connor & Paunonen (2007), different studies reported positive correlations between Conscientiousness and academic success at different school levels (e.g. Chamorro-Premuzic & Furnham, 2003b; Conard, 2006; De Fruyt & Mervielde, 1996; Duff, Boyle, Dunleavy, & Ferguson, 2004; Kappe & van der Flier, 2010). Such a positive correlation is often interpreted in terms of motivation and learner-characteristics of being hard-working, organized, disciplined, and ambitious (Chamorro-Premuzic & Furnham, 2003a; Kappe & van der Flier, 2010; O'Connor & Paunonen, 2007). Also, Openness to Experience was correlated with L2 (English as a foreign language) test scores (Meyer et al., 2019) or academic performance positively (Hirschberg & Itkin, 1978; Shuerger & Kuma, 1987). Furthermore, research findings for the correlations between Extraversion and academic performance present an irregular pattern. In some studies, such as Chamorro-Premuzic and Furnham's (2003a), no correlation was found between academic performance and Extraversion. However, Sanchez-Marin, Rejano-Infante, and Rodriguez-Troyano's (2001) and O'Connor and Paunonen`s (2007) reported that Extraverts performed worse in academic settings, possibly because of distractibility, sociability, and impulsiveness. Nevertheless, Duff and colleagues (2004) argued that Extraversion is positively correlated with a strategic and profound approach to learning.

Agreeableness was mostly found unassociated with academic performance (Chamorro-Premuzic & Furnham, 2003b; O'Connor & Paunonen, 2007). Chamorro-Premuzic and Furnham (2003b) argued that Agreeableness might be irrelevant to learning processes or examination performance. Duff and colleagues (2004) argued that Agreeableness may be related to the surface approach to learning and negatively correlated with academic performance.

Neuroticism, however, was found negatively correlated with academic performance (Chamorro-Premuzic & Furnham, 2003a, 2003b; De Fruyt & Mervielde, 1996; O'Connor & Paunonen, 2007) and positively correlated with surface approaches to learning (Duff et al., 2004). Stress or anxiety might be some potential reasons for such findings (Chamorro-Premuzic & Furnham, 2003a; Zeidner & Matthews, 2000). It might also be that

emotionally stable individuals perform better academically than more neurotic individuals (Chamorro-Premuzic & Furnham, 2003a).

1.3. Research on Metacognition and Personality Traits in Foreign Language Learning Context

The number of research studies examining the relation among metacognition, personality traits, and foreign language performance (FLP) and/or achievement (FLA) is not ample. However, extant studies which examined the relation between (a) metacognition or (b) personality traits and FLP or FLA provided some grounds for this study. These studies will be reviewed chronologically to identify the trends in research and potential limitations as in the following.

Fayyaz and Kamal (2011) provided evidence for the relationship of personality traits and metacognitive listening skills in a foreign language learning context. They found that Neuroticism negatively correlated with metacognitive listening skills while Openness to Experiences had a positive relation with metacognition. Agreeableness did not have a relation with metacognition. Moreover, Conscientiousness was a highly significant predictor of metacognitive listening skills. Openness to Experiences and Conscientiousness explained 20% of the variance in reported metacognitive listening skills. Similarly, Fazeli (2012) found that foreign language learners' metacognitive strategy use correlated with some traits; Extraversion, Openness to Experience, and Conscientiousness, positively and with Neuroticism, negatively. Fazeli (2012) also reported that Conscientiousness and Openness to Experience explained 17.7% of the metacognitive strategy use while learning a foreign language.

Ayhan and Turkyilmaz (2015) also examined the relationship between foreign language learners' metacognitive strategies and personality traits. They found that Extraversion, Openness to Experience, Agreeableness, and Conscientiousness significantly correlated with metacognitive language learning strategy use. Also, Öz (2016) recently reported a significant relationship between personality traits and metacognition. In his study, personality had a substantial impact on determining metacognitive awareness. Furthermore, personality traits explained 29% of the variance in metacognitive knowledge and 28% of the variance in metacognitive regulation. Also, Openness to Experience and Extraversion were the strongest predictors of academic motivation. Moreover, Wahdah, Ainin, and Hamid (2018) examined Dayakese learners' personality traits and foreign language learning strategies. They found significant correlations between (a) Neuroticism and metacognitive strategies and (b) Openness to Experiences and metacognition.

Kelly and Donaldson (2016) carried out an a study investigating the relationship among metacognition, personality, and academic performance. They reported a significant relation between (a) metacognition and academic performance, (b) Conscientiousness and academic performance, and (c) Conscientiousness and metacognition. In total, 13% of the variance in academic performance was explained by metacognition and Conscientiousness. Their multiple regression analysis revealed that metacognition was not a significant predictor of academic performance; however, Conscientiousness was. Kelly and Donaldson (2016) argued that metacognition may depend on personality; when the Conscientiousness is high, metacognition can predict academic success. In other words, when individuals are Conscientious, they can practice metacognition.

1.3.1. Short reflection on the previous research of metacognition, personality, and foreign language performance. Previous research findings confirmed that metacognition and personality traits correlate in the context of foreign language learning. Mostly, Neuroticism was reported for its negative correlation with metacognition while Openness to Experience and Conscientiousness were positively correlated with metacognition. Only few studies (i.e. Kelly & Donaldson, 2016; Öz, 2016) investigated the predictive power of personality traits on metacognition and/or academic achievement. These studies' findings proposed that metacognition might have an indirect effect on academic achievement due to the personality trait of Conscientiousness and/or Openness to Experience.

However, previous findings imposed some limitations. Those studies approached latent variables as a single unified construct. While foreign language performance might be assessed as skills; listening, reading, writing, and speaking, some of the studies measured it as a single score. Similarly, metacognition was measured as a single construct in some studies, while its measurement instruments usually represent at least two factors. Moreover, while metacognition might be a learned component of personality except the last study done by Kelly and Donaldson (2016), none of the studies could grasp a holistic picture of achievement, metacognition,

and personality. This study recognizes that personality traits may facilitate metacognition, and it may be an important indicator of learning or academic success (Fisher, 2002; Kerndl & Aberšek, 2012; Pogrow, 2004; Veenman, 2016; Wang et al., 1990).

2. Method

2.1. Research Design

This study positioned in the quantitative realm. Survey research methods were implemented to describe and interpret the potential relation among metacognition, personality traits, and foreign language performance scores. To Cohen, Manion, and Morrison (2018), education surveys often use test scores, self-report questionnaires and attitude scales, and they can be used to explore or confirm assumptions and hypothesis. Surveys can also be descriptive or analytic. While descriptive surveys describe data, analytic surveys test hypothesized predictors or variables for their influence on dependent variables or relationships among them, as done in this study.

2.2. Participants

Two hundred forty-four (244) students enrolled in the School of Foreign Languages at a state university in Izmir participated in this study. They studied English as a foreign language for two academic semesters at the A2 level. The school complies with the descriptions of foreign language proficiency offered by Common European Framework for Reference for Languages (CEFRL, Council of Europe, 2001). Participants were selected via convenience sampling method for the primary data of academic achievement. The School of Foreign Languages used an institutional standardized scoring matrix for the proficiency tests.

2.3. Data Collection Tools

In this study, two inventories were employed to collect data of personality traits and metacognition data after getting Ethical approval (Ege University, no: 70995613-604.01.01-E.214516). Also, participants' foreign language performance indicators were provided to the author as in excel sheets by the head of the students' affairs office after providing them with the Ethics board approval.

2.3.1. Turkish personality traits inventory. A Turkish personality inventory (BPTI) was used to collect personality data. It was developed by Gençöz and Öncül (2012) regarding the lexical hypothesis. The lexical hypothesis suggests that every culture has its trait adjectives to communicate individual differences (Digman & Inouye, 1986). Regarding Turkey's characteristics such as rapidly changing sociopolitical attitudes, mobility dynamics, collectivistic nature, and the mixture of traditionalism and modernity, Gençöz and Öncül (2012) examined the factor structure of the personality traits in Turkish culture.

Their psychometric analysis produced an inventory that consisted of 45 items rated on a 5-point Likert scale, ranging from *(1) this characteristic does not represent me at all* to (*5) this characteristic represents me very well*. The inventory was factored on six traits; Extraversion, Conscientiousness, Agreeableness, Neuroticism, Openness to Experience, and Negative Valence. This inventory can explain 53% of the variance in personality traits. Internal reliability coefficients for six factors were between .71 and .89.

2.3.2. Turkish metacognitive awareness inventory. Turkish Metacognitive Awareness inventory (TMAI) was used to collect metacognition data. It was adapted to the Turkish language by Akın, Abacı, and Çetin (2007), as the original Metacognitive Awareness Inventory (MAI) was developed by Schraw and Dennison (1994). The correlation analysis produced a relation of .95 between the MAI and TMAI.

Following exploratory factor analysis, it was found that TMAI produced a two-factor solution with eight subcomponents. Internal consistency and test-retest reliability analyses were .95. Similar to the original MAI, TMAI can also be rated on a 5-point Likert scale ranging from *(1) never* to *(5) always.*

2.3.3. Foreign language performance scores. Following the Ethics board approval for this study, the head of the students' affairs office collected participants' second-semester achievement data at the end of the spring semester via the institution's online database. Then, she gave the author participants' achievement data in excel sheets. This data set was represented as performance scores of language skills (i.e. reading, language use- grammar-, writing, speaking, and listening).

The data set included three mid-term exam scores representing English as a foreign language performance within the second semester. Each midterm score was equalled to 85, and these exams included listening (rated out of 15), language use (rated out of 15), writing (rated out of 20), and reading (rated out of 35) sections. At the end of the semester, learners also took a speaking exam (rated out of 15). These exams were prepared and standardized by the testing unit. The test writers were anonymous to the school and they were appointed to this position by the head of the School of Foreign Languages. At the end of each semester, listening, language use, writing, and reading sections' scores were averaged by the institutional scoring matrix to determine students' performance.

2.4. Data Analyses

Data were analyzed through two sets of statistical tests on SPSS and AMOS. The variables displayed non-normal distributions (e.g. speaking, listening, writing scores and personality traits) except metacognitive knowledge, metacognitive regulation, and reading scores. Q-Q plots identified outliers and normality tests violated H_0 (Kolmogorov-Smirnov and Shapiro-Wilks tests $p \leq .05$), and histograms were skewed. Sampling technique also imposed limitations on using parametric tests; therefore, non-parametric correlation (Spearman's) tests were run.

Correlation analyses showed evidence only for reading performance scores' correlation with both metacognitive knowledge and regulation and language use performance scores' correlation with metacognitive regulation. The distribution of reading and language use performance scores were normal and the residuals were normally distributed. After the assumptions (linearity of the model, no multicollinearity, and homoscedasticity) were checked and met, parametric multiple regression analyses were run for reading and language use. Finally, a path analysis was created on AMOS for reading and language use.

3. Findings

In this section, test results will be presented to answer the research questions. Descriptive statistics (medians) will initially be presented to identify dominant personality traits and metacognitive competency in the sample group.

3.1. Descriptive Statistics for Personality Traits and Metacognition

In this study, Agreeableness was the dominant personality trait (M=4.2). It was followed by Openness to Experience (M=3.7), Conscientiousness (M=3.6), and Extraversion (M=3.5). Neuroticism (M=2.6) and Negative Valence (M=1.3) was subordinate personality traits. Regarding metacognition, participants were quickly identified as metacognitive individuals. Their self-reported metacognitive knowledge (MK) was M=3.7, and metacognitive regulation (MR) was M=3.4.

Table 2. *Medians for Personality Traits and Metacognition for the Sample*

Domains	*M*
Agreeableness	4.2
Openness to Experience	3.7
Conscientiousness	3.6
Extraversion	3.6
Neuroticism	2.6
Negative Valance	1.3
Metacognitive Knowledge	3.7
Metacognitive Regulation	3.4

3.2. Relations among Metacognition, Personality Traits, and Foreign Language Performance

A set of Spearman's rho correlation tests identified correlations among FLP represented as skills, personality traits, and metacognition $p< .01$ as seen in **Hata! Başvuru kaynağı bulunamadı.**. Interesting findings pertain to metacognition and personality traits. In this study, Extraversion, Conscientiousness, Agreeableness, and Openness to Experience were positively correlated with MK, while Neuroticism was negatively correlated with MK ($p <.05$). Also, Conscientiousness, Openness to Experience, and Agreeableness correlated with MR positively ($p <.05$).

Findings also confirmed some correlations between FLP scores and metacognition. As for metacognition, reading performance scores were the only ones correlating with both MK and MR positively (p<.05). However, language use scores only correlated with MR positively (p< .05). Other skills did not provide any evidence for correlations with metacognition (p >.05).

Moreover, the correlation pattern between FLP and personality traits was thought-provoking. It is only written channels of communication, i.e. reading, writing, and language use (grammar), correlated with three personality traits, either negatively or positively. Reading (r_s=.148) and language use (r_s=. 275) performances were positively correlated with Conscientiousness, p < .05; however, they were negatively correlated with Extraversion, p< .05. Moreover, language use and writing performances were negatively correlated with Openness to Experience, p< .05.

These findings highlighted that metacognition and some personality traits seem to correlate with reading and language use performance scores similarly. In the following analysis will elaborate on the predictive power of personality traits and metacognition on reading and language use performance scores.

Table 3. *Correlations among Metacognition, Personality Traits, and Foreign Language Performance Scores*

Variables	1	2	3	4	5	6	7	8	9	10	11	MK	MR
1. Listening		.37**	.46**	.37**	.33**								
2. Writing			.55**	.45**	.40**					-.15*			
3. Reading				.65**	.51**	-.12*	.13*					.14*	.16**
4. Language Use					.37**	-.13*	.25**			-.15*			.18**
5. Speaking													
6. Extraversion							.13*	.13*	-.24**	.51**		.17**	
7. Conscientiousness								.31**	-.19**		-.16*	.28**	.37**
8. Agreeableness										.15**	-.21**	.23**	.27**
9. Neuroticism											.31**	-.15*	
10. Opennes to Experience												.37**	.18**
11. Negative Valance													
12. MK													.71*

*** p< .01; *p< .05 (2-tailed)*

3.3. Predictive Power of Metacognition and Personality Traits on Foreign Language Reading and Language Use Performance

Multiple linear regression analyses were run to examine the predictive power of metacognition and personality traits on foreign language reading and language use performance scores. Although these two subsets of a foreign language could be tested in the same test, two different regression analyses were run to identify the effects of metacognition and personality traits on each domain separately for future uses. Moreover, because grammar was tested at the sentence level in this institution, the testing style impacted the author's choice of analyses even if she recognizes that grammar proficiency sets a ground for foreign language performance, including reading, speaking, listening, and writing. The models, including metacognitive components and personality traits for reading and language use, were significant. Predicted reading performance score was equal to 23.3 + .96 (Conscientiousness) -.87 (Extraversion) with (F (2, 241) = 5 p <.05), with an R^2 of .033. Similarly, the language use model was significant (F (2, 241)= 14.7, p <.05), with an R^2 of .10. Predicted foreign language use performance score equaled to 9.6 + .81 (Conscientiousness) - .84 (Openness to Experience). While all predictors in the models were significant (p <.05), metacognitive components were left out.

3.4. Predictive Power of Personality Traits on Metacognition

Other multiple linear regression analyses were run to predict metacognitive knowledge and metacognitive regulation based on five personality traits by the previous findings. The results for metacognitive knowledge and metacognitive regulation models indicated significant regression equations (F (3, 240) = 20.4, p <.05), with an R^2 of .193 and (F (2, 241) = 23.1, p <.05), with an R^2 of .156, respectively. Predicted metacognitive knowledge was equal to 1.84 + .258 (Openness to Experience) + .135(Conscientiousness) + .099(Agreeableness) and predicted metacognitive regulation was equal to 2.08 + .214(Conscientiousness) + .157 (Openness to

Experience), respectively. All variables in these models were significant ($p < .05$). The following Figure 1) presents the paths among the variables.

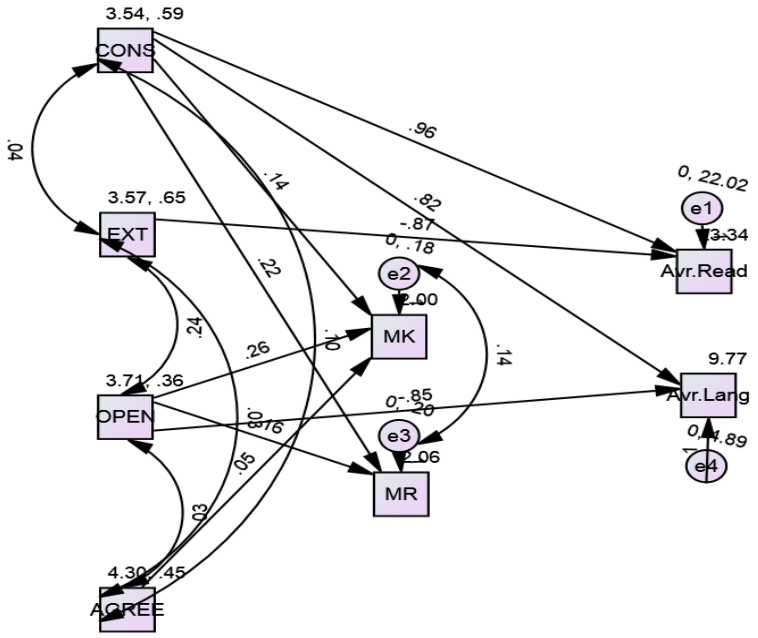

Figure 1. *Metacognition, Personality Traits, and Foreign Language Performance*

4. Discussion and Conclusions

Personality and metacognition are essential factors that need some exploration in educational settings, especially to understand variations in educational outcomes. As personality impacts the development of linguistic abilities (Ellis, 1985) and learners adopt different language learning strategies in harmony with their personalities (Brown, 2001), studying personality traits concerning language competencies can help recognize individual differences that were already brought to classrooms. Moreover, as a significant predictor and tool for learning, metacognition might be a byproduct of personality. This is because individuals tend to utilize learning approaches as their personality might partially determine them (Duff et al., 2004) or be a learnt component of their personality (Furnham et al., 1999). Understanding the interaction of these two components may help support learners' formal experiences in schools to the best.

This study examined the relation between metacognition and personality traits, and findings revealed that metacognition and personality traits are correlated. Some personality traits like Openness to Experience, Conscientiousness, and Agreeableness correlate with metacognition, positively. These findings, indeed, aligned with the previous findings, including Ayhan and Turkyilmaz's (2015), Fayyaz and Kamal's (2011), Fazeli's (2012), and Öz's (2016). However, most of these previous research studies operationalized metacognition as a single construct and studied its relation to personality traits. However, Flavell (1979) highlighted three components of metacognition in his theory; metacognitive knowledge, metacognitive regulation, and metacognitive experiences. Measurement instruments like Metacognitive Awareness Inventory (MAI) developed according to the theory assessing metacognitive knowledge and metacognitive regulation. In this study, as the theory proposes, metacognition's components were studied distinctively concerning personality traits. It was found that 20% of metacognitive knowledge can be explained by Openness to Experience, Conscientiousness, and Agreeableness, besides 16% of metacognitive regulation can be explained by Openness to Experience and Conscientiousness. The percentages calculated in this study were very close to the ones found by Fayyaz and Kamal (2011) and Fazeli (2012).

Regarding the characteristics of the personality traits identified in this study, metacognition can naturally emerge. When individuals are imaginative, creative, intellectually curious, and interested in attending to and processing complex stimuli (Openness to Experience) and when they are controlled against impulses, self-disciplined, organized, and goal-oriented (Conscientiousness) (Weisberg et al., 2011), they may perform metacognitive regulation. Also, beacuse the dominant characteristic of the participants pertained to trust,

cooperation or kindness (i.e., Agreeableness), they may tend to internalize instructional deliveries or utilize feedback without much hesitation. That is, learners might trust their teachers for their expertise, judgments, and feedback to modify their approaches to learning. Through such personality traits learners might already exercise metacognition; they can set goals, keep perseverance in knowledge seeking, think though, question, and experience trial-error, and utilize the directives and feedback from experts while managing tasks demands, achieving goals, or evaluating their learning.

Moreover, this study highlighted that metacognition might be over-showed by personality traits regarding foreign language reading performance. When foreign language performance was operationalized as district language skills, only reading scores were identified to be correlating with personality traits and metacognition. Regarding the definition of reading that pertains to meaning-making or comprehension building via cognitive and metacognitive skills (Ozturk, 2015), findings helped to confirm that reading is a strategic act; therefore, it involves highly conscious thinking. However, Kelly and Donaldson (2016) argued and seen in Figure 1, Conscientious readers might be already self-disciplined, organized, strategic, and goal-oriented and may employ metacognitive acts for reading. That is, this personality trait may mimic characteristics of metacognition. Moreover, it is essential to recognize that Extraversion negatively correlates and predicts foreign language reading performance, as Sanchez-Marin et al., (2001) found. Extraverts are outgoing, energetic, and enthusiastic (Fielden et al., 2015), and they tend to be assertive, highly active, and impulsive (Lucas & Diener, 2001). Regarding Lucas and Diener's (2001) mechanisms (i.e. conditionability, arousal level, and sensitivity to rewarding stimuli) proposed for this trait, it might be difficult or tedious for Extraverts to engage in such a cognitively demanding endeavor for an extended period.

Lastly, findings that pertained to foreign language use (grammar) performance were remarkable. The grammatical system of a language can be a significant dimension for foreign language learning as it helps learners comprehend and produce meaning in a new language. In this study, although language use performance scores correlated with metacognitive regulation, it was predicted significantly by Conscientiousness and Openness to Experience. Indeed, language use performance necessitates goal-oriented, organized, and self-disciplined learning experiences. On the other hand, internalization of grammar might not permit experimentation, imagination, or creativity as Openness to Experience has a negative predictive power. Foreign language learners cannot *play with or test* the grammatical system of a foreign language, especially in formal learning settings where proficiency tests determine their educational pathways. In the context of this study where grammar was tested at the sentence level, learners might be required to internalize *the rules as they are*. Therefore, they should be cautious about controlling and managing their use of grammatical rules as delivered via the instruction and assessed by the standardized tests.

4.1. Pedagogical Implications

Delivering metacognition instruction or developing learners' metacognition might sound easy or straightforward. However, as Veenman et al. (2006) argued that variations in individuals' competencies might be distinctive and metacognitive competencies might not develop, similarly (Ozturk, 2019). Before such training, conducting a needs-analysis study may be crucial to identify individual differences because they may create variations in learning outcomes, for example, mastery of metacognition. After identifying learners' characteristics, for example, personalities, learning styles, and competency with metacognition, it may be possible to create various metacognition training modules that will not force different people into learning the same way. In foreign language learning environments, educational outcomes might vary just because '*who you are'*; that is something to be considered carefully. For administration and teachers, it is essential to recognize and appreciate learners as they are. Instructional and assessment practices, therefore, needs adaptation for learners' characteristics, i.e., personality. As personality may determine how individuals act, institutions must know whom they teach to deliver instruction effectively and design fair assessment tools. When standardization punishes *some learners* or jeopardizes *their* learning opportunities just because who they are, we need to question and revise educational purposes.

5. References

Akın, A., Abacı, R., & Çetin, B. (2007). The validity and reliability study of the Turkish version of the Metacognitive Awareness Inventory. *Educational Science: Theory & Practice*, *7*(2), 655–680.

Alexander, P. A., Murphy, P. K., & Greene, J. A. (2012). Projecting educational psychology's future from its past and present: A trend analysis. In K. R. Harris, S. Graham, T. Urdan, C. B. McCormick, G. M. Sinatra, & J. Sweller (Eds.), *APA educational psychology handbook, Vol 1: Theories, constructs, and critical issues* (pp. 3–32). American Psychological Association.

Ayhan, U., & Turkyilmaz, U. (2015). The use of metacognitive strategies and personality traits among Bosnian university students. *Mevlana International Journal of Education*, *5*(2), 40–40.

Baker, L., & Brown, A. L. (1984). Cognitive monitoring in reading. In J. Flood (Ed.), *Understanding reading comprehension* (pp. 21–44). International Reading Association.

Boulware-Gooden, R., Carreker, S., Thornhill, A., & Joshi, R. M. (2007). Instruction of metacognitive strategies enhances reading comprehension and vocabulary achievement of third-grade students. *The Reading Teacher*, *61*(1), 70–77.

Chamorro-Premuzic, T., & Furnham, A. (2003a). Personality predicts academic performance: Evidence from two longitudinal university samples. *Journal of Research in Personality*, *37*(4), 319–338. https://doi.org/10.1016/S0092-6566(02)00578-0

Chamorro-Premuzic, T., & Furnham, A. (2003b). Personality traits and academic examination performance. *European Journal of Personality*, *17*(3), 237–250. https://doi.org/10.1002/per.473

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.

Conard, M. A. (2006). Aptitude is not enough: How personality and behavior predict academic performance. *Journal of Research in Personality*, *40*(3), 339–346. https://doi.org/10.1016/j.jrp.2004.10.003

Council of Europe. (2001). *CEFR Levels*. https://www.coe.int/en/web/common-european-framework-reference-languages/reference-level-descriptions

Cross, D. R., & Paris, S. G. (1988). Developmental and instructional analyses of children's metacognition and reading comprehension. *Journal of Educational Psychology*, *80*(2), 131–142. https://doi.org/10.1037/0022-0663.80.2.131

Curwen, M. S., Miller, R. G., White-Smith, K. A., & Calfee, R. C. (2010). Increasing teachers' metacognition develops students' higher learning during content area literacy instruction: Findings from the read-write cycle project. *Issues in Teacher Education*, *19*(2), 127–151.

De Fruyt, F., & Mervielde, I. (1996). Personality and interests as predictors of streaming and achievement. *European Journal of Personality*, *10*, 405–425.

Desoete, A., Roeyers, H., & Buysse, A. (2001). Metacognition and mathematical problem solving in grade 3. *Journal of Learning Disabilities*, *34*(5), 435–447. https://doi.org/10.1177/002221940103400505

Digman, J. M., & Inouye, J. (1986). Further specification of the five robust factors of personality. *Journal of Personality and Social Psychology*, *50*(1), 116–123.

Duff, A., Boyle, E., Dunleavy, K., & Ferguson, J. (2004). The relationship between personality, approach to learning, and academic performance. *Personality and Individual Differences*, *36*(8), 1907–1920. https://doi.org/10.1016/j.paid.2003.08.020

Fayyaz, W., & Kamal, A. (2011). Personality traits and the metacognitive listening skills of English as a foreign language in Pakistan. *Journal of Behavioral Sciences*, *21*(2), 59–76.

Fazeli, S. H. (2012). Use of the metacognitive English language learning strategies based on personality traits. *Theory and Practice in Language Studies*, *2*(3), 531–539. https://doi.org/10.4304/tpls.2.3.531-539

Fielden, C., Kim, L. E., & MacCann., C. (2015). Extraversion. In J. Wright (Ed.), *International encyclopedia of the social and behavioral sciences* (2nd ed., pp. 623–627). Elsevier.

Fisher, R. (2002). Shared thinking: Metacognitive modelling in the literacy hour. *Reading*, *36*(2), 63–67.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist*, *34*(10), 906–911.

Furnham, A., & Chamorro-Premuzic, T. (2004). Personality and intelligence as predictors of statistics examination grades. *Personality and Individual Differences*, *37*, 943–955.

Furnham, A., Jackson, C. J., & Miller, T. (1999). Personality, learning style, and work performance. *Personality and Individual Differences*, *27*, 1113–1122.

Gençöz, T., & Öncül, Ö. (2012). Examination of personality characteristics in a Turkish sample: Development of basic personality traits inventory. *The Journal of General Psychology*, *139*(3), 37–41.

Goldberg, L. R. (1990). An alternative "description of personality." The big-five factor structure. *Journal of Personality and Social Psychology*, *59*(6), 1216–1229.

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, *48*(1), 26–34.

Gourgey, A. F. (1998). Metacognition in basic skills instruction. *Instructional Science*, *26*, 81–96.

Hirschberg, N., & Itkin, S. (1978). Graduate student success in psychology. *American Psychologist*, *33*, 1083–1093.

Kappe, R., & van der Flier, H. (2010). Using multiple and specific criteria to assess the predictive validity of the Big Five personality factors on academic performance. *Journal of Research in Personality*, *44*(1), 142–145. https://doi.org/10.1016/j.jrp.2009.11.002

Kelly, D., & Donaldson, D. (2016). Investigating the complexities of academic success: Personality constrains the effects of metacognition. *The Psychology of Education Review*, *40*(2), 17–24.

Kerndl & Aberšek, M. K. (2012). Teachers' competence for developing reader's reception metacognition. *Problems of Education in the 21st Century*, *46*(1979), 52–61.

Klingner, J. K., Vaughn, S., & Schumm, J. S. (1998). Collaborative strategic reading during social studies in heterogeneous fourth-grade classrooms. *The Elementary School Journal*, *99*(1), 3–22. https://doi.org/10.1086/461914

Kuhn, D. (2000). Metacognitive development. *Current Directions in Psychological Science*, *9*(5), 178–181. https://doi.org/10.1111/1467-8721.00088

Lucas, R. E., & Diener, E. (2001). Extraversion. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social and behavioral sciences* (1st ed., pp. 5202–5205). Elsevier.

Maltby, J., Day, L., & Macaskill, A. (2007). *Personality, individual differences, and intelligence* (2nd ed.). Prentice Hall.

McCrae, R. R., & Costa, P. T., J. (2003). *Personality in adulthood: A five factor theory perspective*. The Guilford Press.

Mccrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, *52*(1), 81–90.

Meyer, J., Fleckenstein, J., Retelsdorf, J., & Köller, O. (2019). The relationship of personality traits and different measures of domain-specific achievement in upper secondary education. *Learning and Individual Differences*, *69*, 45–59. https://doi.org/10.1016/j.lindif.2018.11.005

Michalsky, T., Mevarech, Z. R., & Haibi, L. (2009). Elementary school children reading scientific texts: Effects of metacognitive instruction. *The Journal of Educational Research*, *102*(5), 363–376. https://doi.org/10.3200/JOER.102.5.363-376

Muñiz-Swicegood, M. (1994). The effects of metacognitive reading strategy training on the reading performance and student reading analysis strategies of third grade bilingual students. *Bilingual Research Journal*, *18*, 83–97. https://doi.org/10.1080/15235882.1994.10162659

O'Connor, M. C., & Paunonen, S. V. (2007). Big Five personality predictors of post-secondary academic

performance. *Personality and Individual Differences*, *43*(5), 971–990. https://doi.org/10.1016/j.paid.2007.03.017

Öz, H. (2016). The importance of personality traits in students' perceptions of metacognitive awareness. *Procedia-Social and Behavioral Sciences*, *232*, 655–667.

Ozturk, N. (2015). A short review of research on metacognition training. *Journal of Educational and Instructional Studies in the World*, *5 (3)*, 50–62.

Ozturk, N. (2017). *Identifying the nature of metacognition instruction in reading classrooms (Unpublished doctoral dissertation)*. University of Maryland, College Park, Maryland.

Ozturk, N. (2019). A case study of metacognition in a foreign language reading context. *Journal of Language Education and Research*, *5*(2), 192–212. https://doi.org/10.31464/jlere.584458

Ozturk, N., & Senaydın, F. (2019). Dichotomy of EFL reading: Metacognition vs. proficiency. *Dil ve Dilbilimi Çalışmaları Dergisi*, *15*(2), 605–617.

Paris, S. G., Cross, D. R., & Lipson, M. Y. (1984). Informed strategies for learning: A program to improve children's reading awareness and comprehension. *Journal of Educational Psychology*, *76*(6), 1239–1252.

Pogrow, S. (2004). The missing element in reducing the learning gap: Eliminating the "blank stare." *Teachers College Record*, *106*(10), 11381.

Sanchez-Marin, M., Rejano-Infante, E., & Rodriguez-Troyano, Y. (2001). Personality and academic productivity in the university student. *Social Behavior and Personality*, *29*(3), 299–305.

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, *19*(4), 460–475. https://doi.org/10.1006/ceps.1994.1033

Schwab, J. J. (1978). *Science, curriculum, and liberal education: Selected essays*. The Universty of Chicago Press.

Shuerger, J. M., & Kuma, D. L. (1987). Adolescent personality and school performance: A follow up study. *Psychology in the Schools*, *24*, 281–285.

Takallou, F. (2011). The effect of metacognitive strategy instruction on EFL learners' reading comprehension performance and metacognitive awareness. *Asian EFL Journal*, *13*(1), 272–300.

Tanner, K. D. (2012). Promoting student metacognition. *Cell Biology Education*, *11*(2), 113–120.

Van Keer, H., & Vanderlinde, R. (2010). The impact of cross-age peer tutoring on third and sixth graders' reading strategy awareness, reading strategy use, and reading comprehension. *Middle Grades Research Journal*, *5*(1), 33–45.

Veenman, M. V. J. (2016). Metacognition. In P. Afflerbach (Ed.), *Handbook of individual differences in reading* (pp. 26–40). Routledge.

Veenman, M. V. J., Van Hout-Wolters, B. H. A. M., & Afflerbach, P. (2006). Metacognition and learning: Conceptual and methodological considerations. *Metacognition and Learning*, *1*(1), 3–14. https://doi.org/10.1007/s11409-006-6893-0

Wahdah, N., Ainin, M., & Hamid, M. A. (2018). The relationship between personality traits of Dayakese students and their strategies in learning Arabic as a foreign language. *Dinamika Ilmu*, *18*(2), 237–258.

Wang, M. C., Haertel, G. D., & Walberg, H. J. (1990). What influences learning? A content analysis of review literature. *The Journal of Educational Research*, *84*(1), 30–43.

Weisberg, Y. J., DeYoung, C. G., & Hirsh, J. B. (2011). Gender differences in personality across the ten aspects of the Big Five. *Frontiers in Psychology*, *2*(178), 1–11.

Zeidner, M., & Matthews, G. (2000). Intelligence and personality. In R. Sternberg (Ed.), *Handbook of intelligence* (pp. 581–610). Cambridge University Press.

Zhang, L., & Seepho, S. (2013). Metacognitive Strategy Use and Academic Reading Achievement: Insights from a Chinese Context. *Electronic Journal of Foreign Language Teaching*, *10*(1), 54–69.