



Elsa Mrzyglod¹ , Antonio Esposito¹ , Alice Fabbro² , Franco Fabbro³ ,
Cristiano Crescentini⁴ , Alessio Matiz⁴ 

¹Service de Réadaptation Fonctionnelle et Médecine Physique, HUmani-CHU Charleroi, Belgium

²School of Psychology and Education, Université Libre de Bruxelles Brussels, Belgium

³Scuola Superiore Sant'Anna, Institute of Mechanical Intelligence, Italy

⁴Department of Languages and Literatures, Communication, Education and Society, University of Udine, Italy

The Role of Personality in Language Learning

Personality is connected to the affective system, memory, and numerous aspects of cognition, including language. This article aims to: 1) review, in a narrative fashion, how certain personality traits influence verbal expression and second language acquisition; and 2) explore the possibility that different languages (L1, L2, L3, etc.) may affect the personalities of bilinguals or multilinguals in distinct ways. In particular, it presents a case study on language-dependent self-perception in Friulian-Italian bilinguals. Results are presented in relation to a selection of theoretical models of personality: attachment theory, the biosocial model, and the five-factor model. The most robust findings indicate that attachment styles are related to communication styles, and that big-five personality traits are linked to language characteristics and second language acquisition. The need for further research in this area is warranted, especially regarding the impact on certain aspects of personality during verbal expression in a second language.

Keywords: personality, language learning, bilingualism, biosocial model of personality, five factor model of personality

Address for correspondence: Alessio Matiz

Department of Languages and Literatures, Communication, Education and Society, University of Udine, Udine, Italy

E-mail: alessio.matiz@uniud.it

This is an open access article licensed under the CC BY NC ND 4.0 License.

The term personality derives from the Greek “*persona*” (mask), and possibly from the later Latin “*personare*” (to sound through). It refers to the mask of ancient actors, which was equipped with a funnel to amplify the sound of the voice so that it could be heard clearly in amphitheaters. Taxonomies of personality have been proposed since antiquity, starting with Theophrastus of Lesbos, a disciple of Aristotle (Pertsinidis, 2018). In the last century, the most significant contributions to the study of personality have mainly concerned the clinical field (Horney, 1950; Mahler et al., 1978; McWilliams, 2011; Stern, 1985). Subsequently, psychologists have sought to develop classifications based on quantitative assessments describing certain aspects of personality, such as character traits or dispositions reflecting stable dimensions of how we feel, perceive, and act (McAdams, 2008).

Modern psychology considers personality as a set of affective, cognitive and behavioural characteristics that define the uniqueness of an individual or a group, distinguishing them from others (John et al., 2011). Personality is connected to a particular neurofunctional organization involving affective systems, memory (procedural, semantic and episodic), and numerous other aspects of cognition, including the different components of language (phonology, lexicon, morpho-syntax, pragmatics).

In this article, we provide a narrative review of the studies that showed how personality relates to language, in particular to verbal expression and second language learning. We then explore the possibility that different languages (L1, L2, L3, etc.) affect the personalities of bilinguals/multilinguals depending on the language they are using, also by presenting a case study on language-dependent self-perception in Friulian-Italian bilinguals. Since this review of the literature is neuro-linguistically oriented, only a selection of theoretical models of personality has been considered, in particular those linked to affective and cognitive neuroscience (Panksepp, 1998): the Attachment theory, the Five-factor model of personality, and the Biosocial model of personality. The current article aims to stimulate interest in an area of neurolinguistic research that is still largely unexplored.

Theoretical Models of Personality and Verbal Expression

The Attachment Bond

In the second half of the last century, John Bowlby, a trained psychoanalyst, proposed an alternative to the Freudian theory of psychosexual development. Here, he posited that the primary need of children was not, as Sigmund Freud thought, the sensory pleasures associated with feeding but rather a need for proximity and a feeling of security. Bowlby’s theoretical framework is anchored in ethological considerations: he believed that children possess an innate predisposition to “attach” to their primary caretaker, generally the biological mother, because this relationship is critical to their survival and psychological development. The

caregiver's ability to attune to the child's physical, psychological, and communicative needs determines the construction of an attachment bond (Bowlby, 1969, 1973, 1980, 1988): this bond will have lifelong influence on the child's future relationships.

In order to assess attachment style in children aged 12 to 18 months in a standardized way, Mary Ainsworth conceived the so-called Strange Situation (Ainsworth et al., 1978). During this procedure, children are separated from their primary caregiver for brief moments and left in the presence of a stranger. In this way it is possible to identify children who have developed secure or insecure (avoidant, anxious-ambivalent and disorganized) attachment styles. Children with secure attachment have internalized a reliable and responsive mother figure as a "secure base to explore the world" (Ainsworth, 1963): they show a relatively high level of self-esteem and have sufficient confidence in their own abilities. Children with avoidant attachment have difficulty expressing emotions, masking an underlying unexpressed anger, which is nevertheless transmitted through non-verbal communication (tone of voice, gaze, gestures). Children with anxious-ambivalent attachment, while visibly distraught by their caregiver's disappearance, have difficulty in reconciling and instead fixate on reactions of protest such as crying episodes and displays of dysfunctional aggression and anger. Finally, children with disorganized attachment exhibit incoherent and contradictory reactions, alternating between proximity seeking behaviors, manifestations of fear, and avoidance of the caregiver (Vrtička & Vuilleumier, 2012).

The attachment style developed in early childhood tends to stabilize and form one of the foundations of personality. Various tests have been developed to assess attachment at different stages of life. In pre-school children attachment is measured through tasks of story completion (Attachment Story Completion Task) (Bretherton et al., 1990). For primary and secondary school children, a test has been developed based on a series of vignettes illustrating scenes of separation. The test subjects are supposed to express how the protagonists of the cartoons might feel when they are separated from their parents for some time (Separation Anxiety Test) (Wright et al., 1995). Finally, attachment in adults is analyzed by means of an interview that investigates the subject's relationships with their primary caregiver during childhood (Adult Attachment Interview) (Hesse, 2008), or through questionnaires such as the Attachment Style Questionnaire (Feeney et al., 1994).

Attachment style not only constitutes a model of relationships with others, but also influences affective, cognitive, and linguistic functions (Grossmann, 1999; van IJzendoorn et al., 1995). Securely attached individuals present a relevant, clear, sufficiently brief but comprehensive verbal expression. The semantic, autobiographical and episodic components of their declarative memory are unified and harmoniously organized. Individuals with avoidant attachment tend to express themselves in an excessively concise manner; generally presenting a dissociation at the auto-biographical memory level with preserved semantic

memory but impoverished episodic memory. Those with anxious-ambivalent attachment show excessive and redundant verbal expression and frequent digressions. They present a dissociation between episodic and semantic memory, maintaining contradictory recollections; they are sometimes consoled and sometimes rejected by their caregivers. Disorganized attachment is associated with confused or illogical verbal expression and a lack of self-awareness; memorization can be highly disrupted by the presence of multiple memories that are strongly incompatible with each other (Siegel, 1999).

There are only a few experimental studies linking attachment to verbal expression (Furnham, 1990). Recently, Fabbro et al. (2019) investigated the role of attachment in the verbal expression of 63 university students (aged between 20 and 30 years) profiled through the Attachment Style Questionnaire (Feeney et al., 1994; Fossati et al., 2003). Their study assessed expressive characteristics while subjects were describing a picture story ("The Bird Nest Story"; Paradis, 1987). It also analyzed some characteristics at the microlinguistic level (number of units expressed, number of information reported, lexical variety, number of disfluencies) and at the macrolinguistic level (cohesion errors). Higher scores in anxious attachment were associated with higher cohesion errors (measure of discourse elaboration).

In sum, attachment theory, as proposed by Bowlby and assessed through methods like Ainsworth's Strange Situation, emphasizes the importance of early caregiver relationships in shaping lifelong emotional and relational patterns. Research shows that attachment styles influence verbal expression: secure individuals display clear and comprehensive communication, while avoidant, anxious-ambivalent, and disorganized attachments are associated with distinct patterns of overly concise, verbose, or confused language.

The Five-factor Model of Personality

An approach to the study of personality that has received significant scholarly attention is based on a Five-factor model (McCrae & John, 1992). If the assessment of attachment provides an indirect measure of personality, the five-factor model allows a direct assessment of personality traits. Using a questionnaire (Big Five Inventory) with a defined number of questions (typically, 44 or 134 items), five factors are calculated: Extraversion (E), Neuroticism (N), Agreeableness (A), Conscientiousness (C) and Openness to experience (O). Extraversion assesses the energy level and has been linked to the mesolimbic system and the release of the neurotransmitter dopamine (Sutton & Davidson, 1997). Neuroticism relates to affective stability and has been associated with the functions of the libido system and the amygdala (LeDoux, 2015). Agreeableness assesses the level of friendliness versus hostility, while conscientiousness refers to inhibitory and proactive self-regulatory capacity. Finally, openness to experience concerns creativity, originality, and intellectual curiosity (McAdams, 2008). The Five-factor model is currently a cornerstone of personality research based on self-report

questionnaires.

By observing thousands of pairs of homozygotic and heterozygotic twins living in the same or in different family environments, researchers estimated the hereditary and genetic value of the factors measured by the Big Five Inventory. The factors concordance rate for monozygotic twins reared together was estimated at around 50%, whereas it was found to be about 40% in monozygotic twins having grown up separately (Loehlin, 1992). These findings have since then been confirmed in several other publications (Briley & Tucker-Drob, 2014; Turkheimer et al., 2014).

Several studies have attempted to correlate the five factors of the Big Five Inventory to certain components of language (Kerr & Borelli, 2020). Extraversion has been linked to the use of certain categories of words in social contexts (Hirsh et al., 2009). Neuroticism was associated with a preference for words pertaining to negative emotions (Pennebaker & King, 1999), while agreeableness is correlated with a lower incidence of words referring to negative emotions and anger (Hirsh & Peterson, 2009; Pennebaker & King, 1999). Furthermore, extraversion and openness to experience were associated with an increased use of function words (functors) and increased verbal fluency (Mehl et al., 2006). Neuroticism was found to correlate with lower levels of verbal frequency, disfluencies, and incomplete sentences (Gawda, 2007; Sutin et al., 2011).

In the previously mentioned study on the role of attachment and verbal expression (Fabbro et al., 2019), participants were also assessed using the Big Five Inventory. Some expressive characteristics at the microlinguistic and macrolinguistic levels were compared to the five personality factors. Extraversion was found to be significantly correlated with an increase in the production of verbal units and reported information; the lexical variety (indexed by Type/Token ratio) was negatively correlated with agreeableness and extraversion.

In summary, the Five-factor model of personality represents a widely-employed self-report tool for assessing personality. Research has repeatedly shown that the five traits of this model are linked to the use of certain components of language and expressive behaviors.

The Biosocial Model of Personality

Robert Cloninger developed the Temperament and Character Inventory (TCI), an assessment tool based on a biosocial model of personality (Cloninger et al., 1993; 1994). There are established connections between the factors in the TCI and those in the five-factor model of personality (De Fruyt et al., 2006; Ramanaiah et al., 2002). However, the TCI uniquely characterizes personality by differentiating temperamental dimensions (associated with affectivity and implicit memory) from character dimensions (related to self-awareness and either components of declarative memory, semantic and episodic) (Cloninger & Svrakic, 1997; Grigsby & Hartlaub, 1994). In this model, personality is to be understood as a dynamic and multidimensional system deriving from the interaction of

temperament and character. Temperament has underlying biological and genetic bases, whereas character is informed by personal experiences and the socio-cultural context.

The four dimensions of temperament are: 1) Novelty Seeking (NS), which reflects exploratory activity and is linked to the dopamine release system (low dopamine is correlated with higher novelty seeking scores). 2) Harm Avoidance (HA), a dimension of temperament related to avoidance and inhibition of behaviour; it has been linked to the serotonin release system (lower serotonin levels imply more impulsive and uninhibited behaviours). 3) Reward Dependence (R) is a temperament component related to reward signals, particularly those akin to social approval; it has been associated with the noradrenaline release system (lower adrenaline levels are observed when there is greater need for social reinforcement). 4) Persistence (PS) is the fourth component of temperament and refers to aspects of personality characterized by perseverance and tenacity.

The three character dimensions are: 1) Self-directedness (SD) referring to personal responsibility, determination and achievement. It is considered an indicator of the individual's degree of maturity. 2) Cooperativeness (C) assesses the degree of cooperation, acceptance, and respect of others. 3) Self-transcendence (ST) concerns spirituality, self-forgetfulness, and a feeling of unity with nature and the whole, as well as a set of values associated with goodness in the most general sense.

The TCI personality assessment questionnaires have been developed and standardized for adults (Cloninger et al., 1994; Delvecchio et al., 2016), children and adolescents (Luby et al., 1999; Urgesi et al., 2012). In addition to being reliable clinical tools, they have been used to investigate changes in character following various educational trainings in emotion regulation and in mindfulness meditation (Campanella et al., 2014; Crescentini et al., 2015, 2018; Matiz et al., 2020). Several studies in neuroimaging have examined the underlying neurobiological bases of the TCI personality dimensions (Kaasinen et al., 2002, 2005; Petrosini et al., 2015; Sugiura et al., 2000; Tomeček et al., 2020; Tuominen et al., 2013; Turner et al., 2003). To the best of our knowledge, an only study employed the TCI in relation to the assessment of verbal expression (Cantone et al., 2021).

In summary, the TCI possesses some interesting features: it distinguishes between temperamental and character traits and provides an alternative description of personality compared to the Five-factor model. However, the TCI is less employed in research than the Five-factor model, and it has not yet been used to understand how personality influences verbal expression.

Personality and Second Language Acquisition

In order to assess the effects of personality on second language acquisition, a variety of studies have been conducted, the majority of which used the Big Five Inventory (Dewaele, 2012; Novikova et al., 2020). High levels of extraversion have been associated with greater fluency in the second language (Ockey, 2011).

High levels of introversion correlate with high scores in second languages' written and vocabulary tests (Carrell et al., 1996; Robinson et al., 1994; van Daele et al., 2006). While neuroticism does not seem to play a significant role in second language acquisition (Dewaele, 2007), high levels of conscientiousness seem to promote better acquisition of pronunciation, vocabulary and syntax (Novikova et al., 2020; Ockey, 2011). The Big Five Inventory factor that most favours second language acquisition is openness to experience (Biedroń, 2011; Ożanska-Ponikwia & Dewaele, 2012; Hu et al., 2013). In addition, while not strictly a Big Five Inventory metric, high levels of anxiety seem to reduce second language learning in school (Horwitz, 2001).

Recently, personality factors have started to be considered in examining individual differences in language learning and aptitude also from the point of view of the neurocognitive correlates (e.g., Turker et al., 2021). Prat et al. (2019) reported evidence suggesting that individual differences in second language learning are linked to differences in patterns of neural efficiency, adaptability, and synchronization. More in particular, in a sample of monolingual English speakers exposed to 8 weeks of French language training, they found that individual differences in resting-state brain rhythms predicted L2 learning rate and willingness to communicate (which can be considered a personality variable). In this study, willingness to communicate was also found to be connected to speaking proficiency and was considered to be a key element helping to understand individual differences in L2 learning. The authors also highlighted the need to further study this aspect from a neurocognitive point of view. Other recent studies have addressed willingness to communicate in other linguistic backgrounds and in relation to personality variables and traits. In an Iranian context, L2 (English) willingness to communicate was related to the big-five factors of openness to experience and extraversion (Reza & Ali Mansouri, 2017). Willingness to communicate was seen to be a crucial aspect predicting, together with perceived self-competence, L2 reading and oral proficiency in another recent study conducted in Chinese children learning English as a foreign language (Knell & Chi, 2012). In general, studies on willingness to communicate (e.g., MacIntyre, 2020), emotions in second language learning (e.g., Dewaele & MacIntyre, 2014), and complex dynamic systems approaches (e.g., Dörnyei et al., 2015) demonstrate that learners' communicative behavior and self-perception can fluctuate significantly across time and contexts, thus highlighting the need to consider the interaction between personality and language within a dynamic perspective. Finally, very recently Turker et al. (2021) have suggested that enhanced language aptitude would be linked to high willingness and intrinsic motivation to communicate and engage in language activities. From a neuropsychological perspective, a language aptitude profile was argued to comprise a set of neurocognitive predispositions for language learning and its neuroanatomical characteristics involving critical language-related regions such as the auditory cortex, the left inferior parietal lobe and the left inferior frontal gyrus.

Language Influences on Personality

Research in languages and personality has thus principally looked into the effect of personality traits and individual differences in language learning. An alternative set of studies has investigated the role that languages can play in certain components of a bilingual subject's personality. During verbal expression in a second language, certain aspects of the personality may change (Guiora et al., 1975). Bilingual subjects may feel different when using and speaking in their different languages (Pavlenko, 2006). It has been observed that bilingual adolescents may show greater open-mindedness and cultural empathy when expressing themselves in their second language (Dewaele & van Oudenhoven, 2009). Israelis display greater emotional stability in their mother tongue (Hebrew) than individuals who have learned it as a second language (Dewaele & Stavans, 2014). Spanish-English bilinguals exhibit greater extraversion, agreeableness and conscientiousness when using English and greater neuroticism when using Spanish (Rosselli et al., 2017). Bilinguals (children and adults) with L1 Friulian and L2 Italian present greater self-directedness in the TCI when using the second language (Fabbro et al., 2020). Moreover, in Friulian-Italian bilinguals greater novelty seeking in children, as well as greater cooperativeness in adults, is observed when tested in their L2 (Italian). The different personality traits highlighted when using a language may depend on the different contexts in which a language is used (Dewaele, 2016), or on the possible different interpretations of the world that are associated with it (Deutscher, 2010).

Case Study: Differences in Personality Between L1 and L2 in Friulian-Italian Bilinguals

In a previous study, Fabbro et al. (2020) investigated language-dependent changes in self-reported personality components of bilingual adults and children. Participants included Friulian-Italian bilinguals living in the Carnic area of Paularo, a small village in the Italian region of Friuli, located approximately 10 km from Austria and 40 km from Slovenia. The first sample included a group of bilingual adults, while the second involved a group of children recruited in the Paularo primary and middle schools. Besides socio-demographic information (see Fabbro et al., 2020), participants were required to specify their first and second language as well as the context in which they acquired the latter.

For the purpose of this article, we conducted a new set of analyses on the original samples and retained data from 17 adult participants (8 males and 9 females; mean age: 35.70 ± 11.40 years, range: 20–55; years of education: 12.11 ± 3.21) for whom Friulian was their first language and Italian their second language. These participants declared that they had acquired Italian in kindergarten (4 participants) or in primary school (13 participants), thus from 3 or 6 years of age. Seven subjects included in the original study by Fabbro et al. (2020) were excluded from the present analysis because they declared that they had acquired

Italian both at home and at school, or at home only.

The original junior sample consisted of 36 children attending the fifth year of primary school or the first year of middle school in Paularo. The teachers in this school are mainly bilinguals and pupils generally speak both Friulian and Italian with peers. Following the exclusion of participants for whom Friulian was not L1, those for whom L2 was acquired before 3 years of age (i.e., at home), and those who had learning disabilities or who did not complete the questionnaires, the final sample considered in the present analysis consisted of 17 Friulian (L1) – Italian (L2) bilinguals, 8 males and 9 females (mean age: 11.05 ± 0.74 years, range: 10–12), who were highly proficient in both languages. Fifteen participants declared that they had acquired Italian in kindergarten and 2 in primary school.

Both adult and junior participants were randomly divided into two cohorts. Half the participants in either group completed a personality questionnaire (TCI for adults, jTCI for juniors) first in Italian (L2) and after 2 weeks in Friulian (L1). The other half of participants was administered the same questionnaire first in L1 (Friulian) and then in L2 (Italian). The adult version of the TCI requires subjects to answer “true” or “false” to 240 items, referring to the aforementioned four temperament (novelty-seeking, harm-avoidance, reward-dependence, persistence) and three character (self-directedness, cooperativeness, self-transcendence) scales. The jTCI comprehends 108 items requiring “true” or “false” answers mapping the same temperament and character scales (see Fabbro et al., 2020 for other procedural details on the TCI versions used, including the Friulian translation procedure and overall reliability measures).

To investigate whether changes in self-representation in bilinguals depend on the languages used to describe themselves, we analyzed adult and junior scores in L1 and L2 on the TCI and jTCI. Through t-tests for dependent samples, we considered the scores obtained by each participant in the two administrations (Friulian and Italian) of the TCI and jTCI.

In this analysis, we found no significant difference in temperament and character scales between L1 and L2 in adults. However, significant differences were found in children on the novelty seeking temperament scale and on the self-directedness character scale. For both dimensions, children scored higher while answering in their L2 compared to when they answered in their L1 (Table 1; see also Fabbro et al., 2020 for similar findings).

Overall, the results suggest language dependent differences in self-representation of bilingual children. In general, while adult participants maintained the same self-perception across languages, children perceived themselves as more impulsive and transgressive (novelty-seeking) and more determined, goal oriented, autonomous, self-confident and mature (self-directedness) when using L2 (Italian) compared to when using L1 (Friulian).

One possible explanation for this difference between adults and children is that, in adults, self-representations are usually more mature and stable than during childhood or adolescence (Harter, 2003). In the children of the study,

Table 1

TCI (adults) and jTCI (children) raw scores (means and standard deviations) in Friulian-Italian bilingual individuals.

TCI/jTCI Scale	Bilingual adults (<i>n</i> =17)			Bilingual children (<i>n</i> =17)		
	Language	Mean	SD	<i>t</i> (<i>df</i> =16)	<i>p</i>	Mean
Novelty Seeking	Italian	19.41	6.78	1.24	.231	6.17
	Friulian	18.41	6.19			2.69
Harm Avoidance	Italian	13.94	6.55	0.01	.999	2.05
	Friulian	13.94	4.80			2.79
Reward Dependence	Italian	12.70	4.55	-0.38	.703	3.29
	Friulian	12.88	4.15			2.20
Persistence	Italian	4.41	1.58	-1.22	.238	2.17
	Friulian	4.88	1.16			1.01
Self-Directedness	Italian	29.23	6.04	1.43	.170	4.00
	Friulian	27.94	4.89			15.35
Cooperativeness	Italian	29.41	6.68	1.33	.199	13.94
	Friulian	28.41	5.24			15.76
Self-Transcendence	Italian	14.05	5.83	0.08	.934	16.76
	Friulian	14.01	5.02			4.23
						1.95
						2.12
						1.28
						.218

Note. TCI -Temperament and Character Inventory, jTCI - junior Temperament and Character Inventory. Statistical significance for *p* < .05 is marked with asterisk (*). Similarly to the original study of Fabbro et al. (2020), the level of statistical significance of the tests performed for the seven scales of the TCI/jTCI was not corrected for multiple comparisons because of the explorative nature of this research.

two personality traits emerged as language-dependent. The higher scores in self-directedness when using L1 (Italian) can be explained by the fact that, for these children, Italian is a language learned at school and used mostly during school hours. School is a context where pupils are required to develop autonomy and reach goals, both aspects connected to the trait of self-directedness.

Children in the study also exhibited higher scores in the trait of novelty-seeking when using Italian. This finding can be understood from a cultural perspective: for these children, Friulian is the language of their parents and grandparents, symbolizing tradition and cultural heritage (Fabbro & Crescentini, 2015). In contrast, Italian represents a gateway to the modern world, predominantly disseminated through mass media, especially given the trend of Italian gradually replacing the old Friulian language among new generations (it is among the languages of the European Union considered endangered; Jones, 2013).

Conclusions

Every human being presents a set of affective, cognitive and behavioural characteristics defining their personality (John et al., 2011). Clinical psychology has attempted to describe the main personality types through the study of behavioural characteristics, cognitive and affective content and defensive processes (McWilliams, 2011). At the same time, a series of standardized instruments have been developed to analyze the relational, affective and neurocognitive components that make up a given personality (Ainsworth et al., 1978; Cloninger et al., 1993; McCrae & John, 1992).

Personality structures in adults remain sufficiently stable throughout life. This means that personality is connected to a particular neurofunctional organization involving affective systems, memory (procedural, semantic and episodic), the different components of language (phonology, lexicon, morphosyntax, pragmatics) and numerous other aspects of cognition. In this article, an attempt has been made to analyze the role that certain personality traits exert on verbal expression, second language acquisition and the possibility that different languages may affect the personality of bilingual individuals in different ways.

Numerous studies have shown that the attachment bond influences both verbal expression at the micro- and macro-linguistic levels (Furnham, 1990; Siegel, 1999). When describing pictorial stories, subjects with avoidant attachment present a significant reduction in verbal information compared to subjects with anxious-ambivalent attachment, who tend to report more information (with a low Type/Token ratio) and present a significant increase in cohesion errors. This means that attachment bonding influences neurocognitive structures related to both cognitive processing (cohesion processes) and verbal expression (sentence organizations) (Fabbro et al., 2019).

Several studies utilizing the Big Five Inventory have confirmed that personality factors influence language (Kerr & Borelli, 2020): extraversion correlates with an increase in verbal fluency (Mehl et al., 2006), subjects with high le-

vels of agreeableness and extraversion tend to present more informative verbal expression (with a high Type/Token ratio) (Fabbro et al., 2019), whereas those with high levels of neuroticism present increased disfluencies and incomplete sentences (Gawda, 2007; Sutin et al., 2011). This line of research also suggests that the neurofunctional systems involved in the organization of personality and language are partially intertwined.

If the neurofunctional systems involved in personality and language are intertwined, it is highly likely that personality structure can influence language and vice versa (Dewaele, 2012; Novikova et al., 2020). In an attempt to answer this question, a series of studies were conducted to investigate whether certain personality characteristics were able to influence L2 acquisition. It was found that high levels of extraversion and conscientiousness were associated with better pronunciation, better syntactic and lexical skills and better L2 fluency; while high levels of introversion correlated with better performance on written L2 tasks (Novikova et al., 2020; Ockey, 2011; van Daele et al., 2006). In contrast, high levels of anxiety negatively affected L2 acquisition in school (Horwitz, 2001).

If, as we have seen, certain personality factors are able to influence L2 acquisition, it is legitimate to ask whether bilingual subjects modify aspects of their personality depending on the language they are using (Pavlenko, 2006). Several studies described in this review as well as the case study of Friulian-Italian bilingual children seem to point in this direction (Dewaele & Stavans, 2014; Fabbro et al., 2020; Rosselli et al., 2017). In particular, in Friulian-Italian bilingual children self-directedness was significantly greater in the second language (Italian) than in the first language (Friulian). Instead, in the adult sample no differences were observed between the two languages. The interpretation of these data is certainly complex. Sociolinguistic, affective and neurocognitive variables must be taken into consideration. Despite the limitation of this case report (small sample size and reliability only on a self-report questionnaire), this case study is among the few studies that investigated on the possibility that personality changes when language is switched. This is an area of neurolinguistic research that is still largely unexplored, but which we believe could be of fundamental importance. Future studies should confirm and extend the current results. In particular, it seems useful that these studies could examine larger samples and include participants of different age. Moreover, within future studies personality assessment with the Five-factor model should be complemented by using other personality models, such as the Bio-social model described in this review, or with measures of the person's implicit (rather than explicit) self-concept of personality (Greenwald & Farnham, 2000). It seems fundamental that these studies consider the impact of the perceived value of the languages used by participants (Schroedler et al., 2024), and compare the results across different cultural and geographical contexts.

Authorship Details

Elsa Mrzyglod: data analysis and interpretation, writing the article, final approval of the article.

Antonio Esposito: critical revision of the article, final approval of the article.

Alice Fabbro: data analysis and interpretation, final approval of the article.

Franco Fabbro: research concept and design, data analysis and interpretation, critical revision of the article, final approval of the article.

Cristiano Crescentini: collection and/or assembly of data, data analysis and interpretation, writing the article, final approval of the article.

Alessio Matiz: critical revision of the article, final approval of the article.

Conflict of Interest Disclosure

The authors report no conflicts of interest.

Funding

This study received no external funding.

Research Ethics Statement

The approving institution was the Institutional Review Board of the University of Udine, Department of Languages and Literatures, Communication, Education and Society (approval #CGPER-2016-11-23-01). Written informed consent for research assessment was obtained from adult participants and from the parents of the children. The procedures were approved by the local Ethics of the University of Udine on November 23, 2016 and were in accordance with the Helsinki Declaration guidelines.

Data Availability Statement

Data associated with the current study will be made available upon reasonable request to the corresponding author.

References

- Ainsworth, M. D. (1963). The development of infant-mother interaction among the Ganda. In B. M. Foss (Ed.), *Determinants of infant behavior* (pp. 67–112). Wiley.
- Ainsworth, M. D., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of Attachment*. Erlbaum.
- Biedroń, A. (2011). Personality factors as predictors of foreign language aptitude. *Studies in Second Language Learning and Teaching*, 1(4), 467–489. <https://doi.org/10.14746/ssllt.2011.1.4.2>
- Bowlby, J. (1969). *Attachment. Attachment and loss (vol. 1). Basic Books*.
- Bowlby, J. (1973). *Separation: anxiety and anger. Attachment and loss (vol. 2). Hogarth Press*.
- Bowlby, J. (1980). *Loss: sadness and depression. Attachment and loss (vol. 3). Hogarth Press*.
- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. Routledge.
- Bretherton, I., Ridgeway, D., & Cassidy, D. (1990). Assessing internal working models of the attachment relationship: An attachment story completion task for 3-year-olds. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research and intervention* (pp. 273–308). The University of Chicago Press.
- Briley, D. A., & Tucker-Drob, E. M. (2014). Genetic and environmental continuity in personality development: a meta-analysis. *Psychological Bulletin*, 140(5), 1303. <https://doi.org/10.1037/a0037091>
- Campanella, F., Crescentini, C., Urgesi, C., & Fabbro, F. (2014). Mindfulness-oriented meditation improves self-related character scales in healthy individuals. *Comprehensive Psychiatry*, 55(5), 1269–1278. <https://doi.org/10.1016/j.comppsy.2014.03.009>
- Cantone, D., Feruglio, S., Crescentini, C., Cinot, S., & Matiz, A. (2021). A multilevel approach to explore the wandering mind and its connections with mindfulness and personality. *Behavioral Sciences*, 11(9), 125. <https://doi.org/10.3390/bs11090125>
- Carrell, P. L., Prince, M. S., Astika, G. G. (1996). Personality type and language learning in an EFL context. *Language Learning*, 46, 75–99. <https://doi.org/10.1111/j.1467-1770.1996.tb00641.x>
- Cloninger, C. R., Svrakic, D. M., & Przybeck, T. R. (1993). A psychobiological model of temperament and character. *Archives of General Psychiatry*, 50(12), 975–990. <https://doi.org/10.1001/archpsyc.1993.01820240059008>
- Cloninger, C. R., & Svrakic, D. M. (1997). Integrative psychobiological approach to psychiatric assessment and treatment. *Psychiatry*, 60(2), 120–141. <https://doi.org/10.1080/00332747.1997.11024793>
- Cloninger, C. R., Przybeck, T. R., Svrakic, D. M., & Wetzel, R. D. (1994). *The*

temperament and character inventory (TCI): A guide to its development and use. Center for Psychobiology of Personality.

Crescentini, C., Matiz, A., Cimenti, M., Pascoli, E., Eleopra, R., & Fabbro, F. (2018). Effect of mindfulness meditation on personality and psychological well-being in patients with multiple sclerosis. *International Journal of MS Care*, 20(3), 101-108. <https://doi.org/10.7224/1537-2073.2016-093>

Crescentini, C., Matiz, A., & Fabbro, F. (2015). Improving personality/character traits in individuals with alcohol dependence: the influence of mindfulness-oriented meditation. *Journal of Addictive Diseases*, 34(1), 75-87. <https://doi.org/10.1080/10550887.2014.991657>

De Fruyt, F., De Clercq, B. J., van de Wiele, L., & van Heeringen, K. (2006). The validity of Cloninger's psychobiological model versus the five-factor model to predict DSM-IV personality disorders in a heterogeneous psychiatric sample: Domain facet and residualized facet descriptions. *Journal of Personality*, 74(2), 479-510. <https://doi.org/10.1111/j.1467-6494.2006.00382.x>

Delvecchio, G., Garzitto, M., Fagnani, C., Fornasari, L., Stazi, M. A., Piccardi, A., Ciappolino, V., Fabbro, F., Altamura, A. C., & Brambilla, P. (2016). Normative data and effects of age and gender on temperament and character dimensions across the lifespan in an Italian population: A cross-sectional validation study. *Journal of Affective Disorders*, 204, 83-91. <https://doi.org/10.1016/j.jad.2016.06.014>

Deutscher, G. (2010). *Through the language glass: Why the world looks different in other languages.* Heinemann.

Dewaele, J. M. (2007). Predicting language learners' grades in the L1, L2, L3 and L4: The effect of some psychological and sociocognitive variables. *International Journal of Multilingualism*, 4(3), 169-197. <https://doi.org/10.2167/ijm080.0>

Dewaele, J. M. (2012). Personality: Personality traits as independent and dependent variables. In M. Mercer, S. Ryan, & M. Williams (Eds.), *Psychology for language learning* (pp. 42-57). Palgrave MacMillan.

Dewaele, J. M. (2016). Why do so many bi- and multilinguals feel different when switching languages? *International Journal of Multilingualism*, 13(1), 92-105. <https://doi.org/10.1080/14790718.2015.1040406>

Dewaele, J. M., & MacIntyre, P. D. (2014). The two faces of Janus? Anxiety and enjoyment in the foreign language classroom. *Studies in Second Language Learning and Teaching*, 4(2), 237-274. <https://doi.org/10.14746/ssllt.2014.4.2.5>

Dewaele, J. M. & Stavans, A. (2014). The effect of immigration, acculturation and multicompetence on personality profiles of Israeli multilinguals. *International Journal of Bilingualism*, 18(3), 203-221. <https://doi.org/10.1177/1367006912439941>

Dewaele, J. M. & van Oudenhoven, J. P. (2009). The effect of multilingualism/multiculturalism on personality: No gain without pain for third culture kids? *International Journal of Multilingualism*, 6(4), 443-459. <https://doi.org/10.1177/1367006912439941>

org/10.1080/14790710903039906

Dörnyei, Z., MacIntyre, P. D., & Henry, A. (2015). Motivational dynamics in language learning. *Applied Linguistics*, 36(5), 648–651. <https://doi.org/10.1093/applin/amv005>

Fabbro, A., Crescentini, C., D'Antoni, F., & Fabbro, F. (2019). A pilot study on the relationships between language, personality and attachment styles: A linguistic analysis of descriptive speech. *Journal of General Psychology*, 146(3), 283–298. <https://doi.org/10.1080/00221309.2019.1570910>

Fabbro, A., Crescentini, C., Pascoli, E., Screm, S., Cantone, D., & Fabbro, F. (2020). Differences in personality traits in children and adult bilinguals: a pilot study in a bilingual Friulian-Italian context. *Bilingualism: Language and Cognition*, 23(3), 631–638. <https://doi.org/10.1017/S136672891900052X>

Fabbro, F. & Crescentini, C. (2015). *Handbook of Friulian linguistics*. Forum.

Feeney, J. A., Noller, P., & Hanrahan, M. (1994). Assessing adult attachment. In M. B. Sperling & W. H. Berman (Eds.), *Attachment in adults: Clinical and developmental perspectives* (pp. 128–152). Guilford Press.

Fossati, A., Feeney, J. A., Donati, D., Donini, M., Novella, L., Bagnato, M., Acquarini, E., & Maffei, C. (2003). On the dimensionality of the Attachment Style Questionnaire in Italian clinical and nonclinical participants. *Journal of Social and Personal Relationships*, 20(1), 55–79. <https://doi.org/10.1177/02654075030201003>

Furnham, A. (1990). Language and personality. In H. Giles & W. P. Robinson (Eds.), *Handbook of language and social psychology* (pp. 73–95). John Wiley & Sons.

Gawda, B. (2007). Neuroticism, extraversion, and paralinguistic expression. *Psychological Reports*, 100(3), 721–726. <https://doi.org/10.2466/pr0.100.3.721-726>

Greenwald, A. G., & Farnham, S. D. (2000). Using the implicit association test to measure self-esteem and self-concept. *Journal of Personality and Social Psychology*, 79(6), 1022. <https://doi.org/10.1037//0022-3514.79.6.1022>

Grigsby, J., & Hartlaub, G. H. (1994). Procedural learning and the development and stability of character. *Perceptual and Motor skills*, 79(1), 355–370. <https://doi.org/10.2466/pms.1994.79.1.355>

Grossmann, K. E. (1999). Old and new internal working models of attachment: The organization of feelings and language. *Attachment & Human Development*, 1(3), 253–269. <https://doi.org/10.1080/14616739900134141>

Guiora, A. Z., Paluszny, M., Beit-Hallahmi, B., Catford, J. C., Cooley, R. E., & Dull, C. Y. (1975). Language and person studies in language behavior 1. *Language Learning*, 25(1), 43–61. <https://doi.org/10.1111/j.1467-1770.1975.tb00108.x>

Harter, S. (2003). The development of self-representations during childhood and adolescence. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and*

identity (pp. 610–642). The Guilford Press.

Hirsh, J. B., DeYoung, C. G., & Peterson, J. B. (2009). Meta-traits of the Big Five differentially predict engagement and restraint of behavior. *Journal of Personality*, 77(4), 1085–1102. <https://doi.org/10.1111/j.1467-6494.2009.00575.x>

Hirsh, J. B., & Peterson, J. B. (2009). Personality and language use in self-narratives. *Journal of Research in Personality*, 43(3), 524–527. <https://doi.org/10.1016/j.jrp.2009.01.006>

Hesse, E. (2008). *The Adult Attachment Interview: Protocol, method of analysis, and empirical studies*. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 552–598). The Guilford Press.

Horney, K. (1950). *Neurosis and human growth*. Norton.

Horwitz, E. (2001). Language anxiety and achievement. *Annual Review of Applied Linguistics*, 21, 112–126. <https://doi.org/10.1017/S0267190501000071>

Hu, X., Ackermann, H., Martin, J. A., Erb, M., Winkler, S., & Reiterer, S. M. (2013). Language aptitude for pronunciation in advanced second language (L2) learners: Behavioural predictors and neural substrates. *Brain and Language*, 127(3), 366–76. <https://doi.org/10.1016/j.bandl.2012.11.006>

John, O., Robins, R., & Pervin, L. (2011). *Handbook of personality. Theory and research*. The Guilford Press.

Jones, M. P. (2013). Endangered languages and linguistic diversity in the European Union. European Union, Directorate general for internal policies. [https://www.europarl.europa.eu/RegData/etudes/note/join/2013/495851/IPOL-CULT_NT\(2013\)495851\(SUM01\)_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/note/join/2013/495851/IPOL-CULT_NT(2013)495851(SUM01)_EN.pdf)

Kaasinen, V., Maguire, R. P., Kurki, T., Brück, A., & Rinne, J. O. (2005). Mapping brain structure and personality in late adulthood. *Neuroimage*, 24(2), 315–322. <https://doi.org/10.1016/j.neuroimage.2004.09.017>

Kaasinen, V., Nurmi, E., Bergman, J., Solin, O., Kurki, T., & Rinne, J. O. (2002). Personality traits and striatal 6-[18F] fluoro-L-dopa uptake in healthy elderly subjects. *Neuroscience Letters*, 332(1), 61–64. [https://doi.org/10.1016/S0304-3940\(02\)00929-1](https://doi.org/10.1016/S0304-3940(02)00929-1)

Kerr, M. L., Borelli, J. L. (2020). Linguistic analysis in personality research (including the Linguistic Inquiry and Word Count). In B. J. Carducci & C. S. Nave (Eds.), *The Wiley encyclopedia of personality and individual differences: Measurement and assessment vol. II* (pp. 73–78). Wiley.

Knell, E. & Chi, Y. (2012). The roles of motivation, affective attitudes, and willingness to communicate among Chinese students in early English immersion programs. *International Education*, 41(2), 66–87.

LeDoux, J. (2015). *Anxious: Using the brain to understand and treat fear and anxiety*. Viking.

Loehlin, J. C. (1992). *Genes and environment in personality development*. Sage.

Luby, J. L., Svrakic, D. M., McCallum, K., Przybeck, T. R., & Cloninger, C.

R. (1999). The Junior Temperament and Character Inventory: preliminary validation of a child self-report measure. *Psychological Reports*, 84(3_suppl), 1127-1138. <https://doi.org/10.2466/pr0.1999.84.3c.1127>

MacIntyre, P. (2020). Expanding the theoretical base for the dynamics of willingness to communicate. *Studies in Second Language Learning and Teaching*, 10(1), 111-131. <https://doi.org/10.14746/ssl.2020.10.1.6>

Mahler, M., Pine, F., Bergman, A. (1978). *The psychological birth of the human infant: Symbiosis and individuation*. Routledge.

Matiz, A., Fabbro, F., Paschetto, A., Cantone, D., Paolone, A. R., & Crescentini, C. (2020). Positive impact of mindfulness meditation on mental health of female teachers during the COVID-19 outbreak in Italy. *International Journal of Environmental Research and Public Health*, 17(18), 6450. <https://doi.org/10.3390/ijerph17186450>

McAdams, D. (2008). *The Person. A new introduction to personality psychology*. Wiley.

McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality*, 60(2), 175-215. <https://doi.org/10.1111/j.1467-6494.1992.tb00970.x>

McWilliams, N. (2011). *Psychoanalytic diagnosis: understanding personality structure in the clinical process*. The Guilford Press.

Mehl, M. R., Gosling, S. D., & Pennebaker, J. W. (2006). Personality in its natural habitat: manifestations and implicit folk theories of personality in daily life. *Journal of Personality and Social Psychology*, 90(5), 862. <https://doi.org/10.1037/0022-3514.90.5.862>

Novikova, I. A., Berisha, N. S., Novikov, A. L., & Shlyakhta, D. A. (2020). Creativity and personality traits as foreign language acquisition predictors in university linguistics students. *Behavioral Sciences*, 10(1), 35. <https://doi.org/10.3390/bs10010035>

Ockey, G. (2011). Self-consciousness and assertiveness as explanatory variables of L2 oral ability: A latent variable approach. *Language Learning*, 61(3), 968-989. <https://doi.org/10.1111/j.1467-9922.2010.00625.x>

Ożańska-Ponikwia, K., & Dewaele, J. M. (2012). Personality and L2 use: The advantage of being openminded and self-confident in an immigration context. *Eurosla Yearbook*, 12(1), 112-134. <https://doi.org/10.1075/eurosla.12.07oza>

Panksepp, J. (1998). *Affective neuroscience: The foundations of human and animal emotions*. Oxford University Press.

Paradis, M. (1987). *The assessment of bilingual aphasia*. Erlbaum.

Pavlenko, A. (2006). Bilingual selves. In A. Pavlenko (Ed.), *Bilingual minds: Emotional experience, expression, and representation* (pp. 1-33). *Multilingual Matters*.

Pennebaker, J. W., & King, L. A. (1999). Linguistic styles: language use as an individual difference. *Journal of Personality and Social Psychology*, 77(6), 1296-1312. <https://doi.org/10.1037//0022-3514.77.6.1296>

Pertsinidis, S. (2018) Theophrastus' Characters: A new introduction. Routledge.

Petrosini, L., Cutuli, D., Picerni, E., & Laricchiuta, D. (2015). Cerebellum and personality traits. *The Cerebellum*, 14(1), 43-46. <https://doi.org/10.1007/s12311-014-0631-y>

Prat, C. S., Yamasaki, B. L., & Peterson, E. R. (2019). Individual differences in resting-state brain rhythms uniquely predict second language learning rate and willingness to communicate in adults. *Journal of Cognitive Neuroscience*, 31(1), 78–94. https://doi.org/10.1162/jocn_a_01337

Ramanaiah, N. V., Rielage, J. K., & Cheng, Y. (2002). Cloninger's Temperament and Character Inventory and the NEO Five-Factor inventory. *Psychological Reports*, 90(3_suppl), 1059–1063. <https://doi.org/10.2466/pr0.2002.90.3c.1059>

Reza, K. & Ali Mansouri, N. (2017). L2 willingness to communicate, openness to experience, extraversion, and L2 unwillingness to communicate: the Iranian EFL context. *RELC Journal: A Journal of Language Teaching and Research*, 48(2), 241-255. <https://doi.org/10.1177/0033688216645416>

Robinson, D., Gabriel, N., & Katchan, O. (1994). Personality and second language learning. *Personality and Individual Differences*, 16(1), 143-157. [https://doi.org/10.1016/0191-8869\(94\)90118-X](https://doi.org/10.1016/0191-8869(94)90118-X)

Rosselli, M., Velez-Urbe, I., & Ardila, A. (2017). Personality traits in bilinguals. In A. Ardila, A. B. Cieślicka, R. R. Heredia, & M. Rosselli (Eds.), *Psychology of bilingualism: the cognitive and emotional world of bilinguals* (pp. 259-267). Springer.

Schroedler, T., Purkarthofer, J., & Cantone, K. F. (2024). The prestige and perceived value of home languages. Insights from an exploratory study on multilingual speakers' own perceptions and experiences of linguistic discrimination. *Journal of Multilingual and Multicultural Development*, 45(9), 3762-3779. <https://doi.org/10.1080/01434632.2022.2121402>

Siegel, D. (1999). *The developing mind: Toward a neurobiology of interpersonal experience*. Guilford Press.

Stern, D. (1985). *The interpersonal world of the infant*. Basic Books.

Sugiura, M., Kawashima, R., Nakagawa, M., Okada, K., Sato, T., Goto, R., Sato, K., Ono, S., Schormann T., Zilles K., & Fukuda H. (2000). Correlation between human personality and neural activity in cerebral cortex. *Neuroimage*, 11(5), 541-546. <https://doi.org/10.1006/nimg.2000.0564>

Sutin, A. R., Terracciano, A., Kitner-Triolo, M. H., Uda, M., Schlessinger, D., & Zonderman, A. B. (2011). Personality traits prospectively predict verbal fluency in a lifespan sample. *Psychology and Aging*, 26(4), 994–999. <https://doi.org/10.1037/a0024276>

Sutton, S., & Davidson, R. (1997). Prefrontal brain asymmetry: A biological substrate of the behavioral approach and inhibition systems. *Psychological Science*, 8(3), 204-210. <https://doi.org/10.1111/j.1467-9280.1997.tb00413.x>

Tomeček, D., Androvičová, R., Fajnerová, I., Děchtěrenko, F., Rydlo J,

Horáček, J., Lukavský, J., Tintěra, J., & Hlinka, J. (2020). Personality reflection in the brain's intrinsic functional architecture remains elusive. *PLoS One*, 15(6), e0232570. <https://doi.org/10.1371/journal.pone.0232570>

Tuominen, L., Salo, J., Hirvonen, J., Nägren, K., Laine, P., Melartin, T., ... & Keltikangas-Järvinen, L. (2013). Temperament, character and serotonin activity in the human brain: a positron emission tomography study based on a general population cohort. *Psychological Medicine*, 43(4), 881-894. <https://doi.org/10.1017/S003329171200164X>

Turker, S., Seither-Preisler, A., & Reiterer, S. M. (2021). Examining individual differences in language learning: A neurocognitive model of language aptitude. *Neurobiology of Language*, 2(3), 389–415. https://doi.org/10.1162/nol_a_00042

Turkheimer, E., Pettersson, E., & Horn, E. (2014). A phenotypic null hypothesis for the genetics of personality. *Annual Review of Psychology*, 65, 515-540. <https://doi.org/10.1146/annurev-psych-113011-143752>

Turner, R. M., Hudson, I. L., Butler, P. H., & Joyce, P. R. (2003). Brain function and personality in normal males: a SPECT study using statistical parametric mapping. *Neuroimage*, 19(3), 1145-62. [https://doi.org/10.1016/s1053-8119\(03\)-00171-x](https://doi.org/10.1016/s1053-8119(03)-00171-x)

Urgesi, C., Romanò, M., Fornasari, L., Brambilla, P., & Fabbro, F. (2012). Investigating the development of temperament and character in school-aged children using a self-report measure. *Comprehensive Psychiatry*, 53(6), 875-883. <https://doi.org/10.1016/j.comppsy.2012.01.006>

van Daele, S., Housen, A., Pierrard, M., & De Bruyn, L. (2006). The effect of extraversion on oral L2 proficiency. *EUROSLA yearbook*, 6(1), 213-236. <https://doi.org/10.1075/eurosla.6.13dae>

van IJzendoorn, M. H., Dijkstra, J., & Bus, A. G. (1995). Attachment, intelligence, and language: A meta-analysis. *Social Development*, 4(2), 115-128. <https://doi.org/10.1111/j.1467-9507.1995.tb00055.x>

Vrtička, P. & Vuilleumier, P. (2012). Neuroscience of human social interactions and adult attachment style. *Frontiers in Human Neuroscience*, 6, 212. <https://doi.org/10.3389/fnhum.2012.00212>

Wright, J., Binney, V., & Smith, P. (1995). Security of attachment in 8–12-year-olds: A revised version of the Separation Anxiety Test, its psychometric properties and clinical interpretation. *Child Psychology & Psychiatry & Allied Disciplines*, 36 (5), 757–774. <https://doi.org/10.1111/j.1469-7610.1995.tb01327.x>