

## FIGURING OUT THE FIGURATIVE: INDIVIDUAL DIFFERENCES IN LITERARY METAPHOR COMPREHENSION<sup>1</sup>

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*This paper explores the cognitive and affective-conative correlates of metaphor comprehension. We first introduce the concept of metaphor by describing its essential features and functions. Then, we give a short review of key findings derived from cognitive and developmental studies of metaphor comprehension. Finally, we discuss individual differences in metaphoric skill and sensitivity and present the results of an empirical investigation in which we sought to determine the relationship between literary metaphor comprehension, the subjective experience of metaphors and the readers' verbal intelligence and personality traits. On the basis of our research findings, it is argued that metaphoric ability represents a central facet of intelligence and that the Test of Literary Metaphor Comprehension designed in our study may be viewed as a valid measure of verbal ability.*

**Key words:** *metaphor comprehension, individual differences, verbal intelligence, personality traits (Big Five)*

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## INTRODUCTION

### The omnipresence and omnipotence of metaphors

In a world where words have only literal meanings A is A, and B is B. But we are not constrained to such a world; rather, we are constantly employing our uniquely human ability to cross the boundaries of the factual and to deal with statements that are “contrary to fact, yet that are on some level true and authentic” (Winner, 1988, p. 2). In other words, we lead a parallel existence in an ever-stretching world of figurative language, where it can sometimes rightly be stated that A is B.

It is exactly this juxtaposition of concepts stemming from quite divergent domains but being linked by a certain similarity, that is at the root of a metaphoric utterance. Regardless of its grammatical form, a metaphor can be decomposed into the following basic components: the *topic/target*, i.e. the subject of the metaphor; the *vehicle/base/source*, i.e. the means by which the speaker indirectly refers to the topic; and the *ground*, i.e. the attributes shared by topic and vehicle. All metaphors rest on the relation of similarity, but to define them, “we need also to distinguish between literal and *metaphoric similarity*” (Winner, 1988, p. 19; italics ours). According to Ortony (1979, in Winner, 1988), the latter is characterized by a marked salience imbalance, whereby the properties shared are of high salience to the vehicle and of low salience to the topic. Furthermore, an imbalance exists in the familiarity and systematicity of the domains from which topic and vehicle are drawn, in that the vehicle is taken from a domain that is more familiar, more concrete and more structured than that of the topic (Gentner et al., 2001). Thus, a defining feature of metaphors is their asymmetry or directionality, and hence their nonreversibility. Why should this feature be so important?

It is from the *salience, information and systematicity imbalance* that metaphors derive their descriptive and explanatory power. As Winner explains: “A metaphor invites us to view the topic *as* the vehicle. Because [...] what is shared is more salient to the vehicle, the result is that we notice properties of the topic that ordinarily go unnoted” (1988, p. 19; italics in the original). In other words, by going along and viewing the topic through the lens of the vehicle, we gain a new, better structured or more profound understanding of the concept in question. It should be clear from here that a metaphor is more than a decorative aspect of language, more than a substitute for a literal term, and more than a simple comparison between topic and vehicle; it is to be acknowledged as a powerful “cognitive tool” – one that helps us get hold of and express complex and abstract ideas, and even serves to reshuffle or create new pathways of categorization (Winner, 1988). To be quite in line with the topic, one could say that we sail the sea of concepts carried by waves of metaphors. Contemporary researchers of metaphor generally espouse the idea that *language is in its bones metaphorical and that metaphor represents a vital organ of human cog-*

niton (Gibbs et al., 1997; Klikovac, 2004; Lakoff and Johnson, 1980; Winner, 1988). Without the ability to think in terms of metaphors, the world around, as well as within us, would be only partially discerned and partially available (hence, also partially appreciated). So, the important question arises: how do we understand metaphors?

## **Studies of metaphor comprehension**

According to Winner, “metaphor comprehension is an asymmetrically interactive process by which we come to see the topic as the vehicle, and in which the topic influences which aspects of the vehicle apply to the topic” (1988, p. 32). How exactly does this work? And does it work equally well for children as for adults? Equally well for people of different ability levels and personality profiles?

**Cognitive studies.** The first question is addressed by cognitive-psychological studies delving into the mechanisms of metaphor comprehension. These studies have provided two major accounts of how metaphors are processed (Gentner & Bowdle, 2002).

The first is the analogy model or *comparison approach* proposed by Gentner and colleagues, who argue that the same structure-mapping processes used to explain analogy also apply to metaphor processing. The first stage in metaphor comprehension is a symmetrical (role-neutral) alignment process, in which topic/target and vehicle are compared and a common schema is derived from the comparison. This stage is followed by a directional (role-specific) process of inference-projection from the more concrete and familiar vehicle to the topic. According to this model, metaphor comprehension is to be conceived of as a two-stage “comparison→mapping” process, where “alignment highlights parallel structure [...], and inference-projection creates new knowledge in the target (Gentner et al., 2001, pp. 10-11).

The second approach, taken by Glucksberg and colleagues, is the (attributive) *categorization approach*. The idea behind this theory is that metaphors are basically class-inclusion statements asserting that the topic is a member of the category of which the vehicle is the prototypical member. Because the target is not literally a subordinate concept of the vehicle, the first step in metaphor comprehension is to invoke or create a metaphorical category based on the salient properties of the vehicle. Then, the properties of this metaphorical category can be attributed to the target. So, in retracing the steps of metaphor processing, Glucksberg et al.’s model proposes a “categorization-mapping” sequence which is asymmetrical throughout, i.e. in which the roles of target and vehicle are differentiated from the outset (Gentner et al., 2001, p. 26).

To assess which account fits the reality of metaphor processing better, a new variable has to be introduced – the *level of conventionality* of a metaphor. How a metaphor is processed depends namely on whether it is novel or has become a regu-

lar way of referring to something (a standard figure of speech). As Gentner explains, the process of “conventionalization results in a shift in metaphor processing from on-line active representation to retrieval of stored meanings” (Gentner et al., 2001, p. 19). The comprehension of conventional metaphors relies on *categorization* of the target to a polysemous vehicle which refers both to a literal concept and to an associated metaphorical category. Novel metaphors, on the other hand, are processed *like analogies*, with *comparison* being the fundamental process driving comprehension.

When making a distinction between novel and conventional metaphors it should also be noted that novel metaphors are consistently rated by subjects as higher in metaphoricity (Gentner et al., 2001, p. 34). Thus, it seems that *a novel metaphor is more of a metaphor!* Despite being processed in much the same way, a novel metaphor is also more than analogy, in that it is more structurally variable and can serve both explanatory-cognitive and expressive-affective purposes (Gentner et al., 2001). Finally, it ought to be mentioned that literary metaphors (which are by definition unconventional) are even more complex than novel metaphors created in everyday language as they involve processes of metonymy and phonological matching (ibid.).

**Developmental research.** The question of children’s ability to grasp metaphors and of developmental differences in metaphor comprehension has also been looked into rather thoroughly. Early research on the development of metaphoric ability indicated that this is a skill to emerge rather late in childhood, only after the child has acquired the structures of concrete or even formal operational thought. However, more recent studies provide a more nuanced picture, showing that even preschool children exhibit instances of metaphoric ability, although their understanding of metaphors is prone to certain errors and incomplete (Ana Marjanović-Shane, personal communication; see also Winner, 1988). Furthermore, it has been found that metaphor comprehension doesn’t emerge as a universal skill across all domains, but rather on a domain-by-domain basis (Winner, 1988). On their way to adult-level mastery of metaphoric skill, children seem to encounter the following difficulties: (a) they often miss the point of nonsensory/relational metaphors; (b) they don’t always know which properties of the vehicle – relational or physical – to transfer onto the target; (c) they may fail to notice an analogy/similarity across domains unless the overall mapping is complete; and (d) they are insensitive to the salience imbalance of metaphors (ibid.). What seems to provoke these problems and drive children into literal or inappropriate interpretations of a metaphor is not a perceptual, but an *informational deficit*, as well as *poor abstraction and domain-differentiation*. In other words, metaphor comprehension in early childhood seems to be constrained by a lack of familiarity with the domains involved, the incompleteness of conceptual development and a still underdeveloped ability to go beyond superficial appearances.

**The core components of metaphor comprehension.** So, what have we learned from cognitive and developmental studies about the ingredients of metaphoric ability? First of all, it needs to be said that “metaphor research has focused disproportionately on conventional metaphors” (Gentner et al., 2001, p. 41), whereas “the problem for psychologists is to account for our capacity to understand novel meta-

phors. [...] A novel metaphor surprises the listener and challenges him to solve a puzzle by mapping attributes and relations between the stated and implied elements being linked” (Winner, 1988). To ‘get the picture’ of a metaphor one needs to have built sufficient *domain-specific knowledge*, i.e. knowledge about the properties of target and vehicle, and their respective domains and to have acquired a level of *conceptual development* where categories and concepts are rather finely differentiated and knowledge of the world is densely but flexibly structured. This then allows for *abstraction and analogical insight* by which we come to educe the *relationship of similarity in dissimilarity* and make *cross-domain mappings* revealing to us the meaning of a metaphor.

### **Individual differences in metaphor comprehension**

While trying to uncover the development and cognitive mechanisms of metaphoric ability, not many studies have probed into individual differences in metaphor comprehension. In a not so recent study, Kogan et al. (1980, in Winner, 1988) examined the relationship between metaphoric sensitivity and a variety of intellectual and affective measures. They found that metaphoric ability is positively correlated with aesthetic sensitivity and divergent thinking, but failed to establish a correlation between metaphor scores and verbal intelligence (as measured by a standardized test). Based on the latter finding, Winner assumes that metaphoric sensitivity “may even be unrelated to verbal intelligence of the kind ordinarily valued in schools and assessed by standardized tests” (1988, p. 115). There are several reasons why Kogan et al.’s result is surprising – and probably to be explained by methodological aspects of that particular study (i.e. using a nonverbal task to assess metaphoric sensitivity) – and why Winner’s supposition is indeed questionable.

First, the competencies and skills necessary to understand novel metaphors are all considered to be facets of intellectual ability, with abstract analogical reasoning (identified as the basic mechanism of novel metaphor comprehension) often believed to be at the heart of intelligence. In fact, metaphor interpretation tasks are already included in some standardized tests of intelligence (for instance in the widely used<sup>3</sup> Verbal Series designed by Stevanović; see test description in the next section).

Second, there is empirical evidence from cognitive studies that individual differences in metaphor comprehension become more pronounced when shifting from conventional to novel metaphors: the mean comprehension time is longer and the SD in RTs substantially higher in tasks involving novel figurative statements (M=3058ms; SD=1327ms) than in those involving conventional figurative statements (M=2160ms; SD=834ms) (see Table 3 in Bowdle & Gentner, 2005). This indicates that, with increased novelty, the metaphor comprehension task gains in

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<sup>3</sup> Referring to Serbia.

difficulty and performance on it becomes dependent on certain intellectual skills not equally distributed between subjects.

And third, the expectation that there should be a connection between intellectual ability and metaphor comprehension – or rather that understanding metaphors is an intellectually demanding task – also fits people’s implicit theories of intelligence. In depicting a person of somewhat lesser intellectual capacity many writers and filmmakers resort to the following figure: they make a particular character ‘take everything literally’ and display no sensitivity to figurative language.

All this, we believe, supports the expectation that understanding novel metaphors, such as those found in literature, represents an intellectually challenging task, on which people of different levels of verbal ability will perform with marked inter-subject variance.

## **PROBLEM**

The main goal of our research was therefore to test this hypothesis and to examine whether and how literary metaphor comprehension is related to the readers’ intellectual ability (as assessed by a standardized test of verbal intelligence). But because metaphors, especially literary ones, are multidimensional and serve affective-expressive purposes beside cognitive-explanatory ones, we have also looked into the relationship between metaphor comprehension, the readers’ personality traits and their subjective experience of literary metaphors.

## **METHOD**

131 high-school students, whose average age was 17, participated in the study. For each subject, assessments of verbal intelligence, personality traits, literary metaphor comprehension and subjective experience of literary metaphors were obtained, using the following instruments:

1. The Verbal Series (VS) – a standardized test of verbal intelligence, comprised of 5 subtests assessing logical/meaningful memory, classification skills, proverb comprehension (which is essentially a metaphor comprehension task, as well), analogical reasoning, and comprehension of mixed-up sentences;
2. NEO-PI-R – a personality inventory assessing the “Big Five” domains of personality (i.e., Neuroticism, Extraversion, Openness-to-Experience, Agreeableness, and Conscientiousness) and 30 more specific personality traits (6 within each domain);
3. Test of Literary Metaphor Comprehension (TLMC) – a test designed specifically for the purposes of this study to assess literary metaphor comprehension;

the test contains 28 items (drafted from different works of literature), organized in two series: the first features sentences or passages where only one word or a phrase are used metaphorically, whereas the second consists of short allegorical passages; subjects were asked to give their interpretations of the metaphors' meaning (the items can thus be regarded as open-end questions) and no strict time-limit was imposed; each answer was rated on a three-point scale, with 0 indicating a literal or misguided interpretation, 1 indicating a meaningful but incomplete metaphoric interpretation, and 2 indicating an accurate and complete metaphoric interpretation; based on the results of a pilot-research, a scoring key was devised containing prototypical answers of each category for each item; sample items from the TLMC can be found in the APPENDIX;

4. The Experience of Literary Metaphors Scale (ELMS) – a series of semantic differential-type items designed to assess the subjective response to the use of metaphoric language (as opposed to nonfigurative language); subjects were asked to describe their experience of literary metaphors, a sample of which was featured in the TLMC, by rating them<sup>4</sup> on several dimensions (e.g., full-empty, deep-shallow, static-dynamic, etc.); these dimensions were chosen so as to allow assessment of both the cognitive (i.e., does the subject perceive literary metaphors as something understandable?) and the affective-conative (i.e., does the subject perceive literary metaphors as something beautiful and moving?) experience (N. B. not the meaning!) of literary metaphors.

## RESULTS

***Psychometric properties of the TLMC.*** Since the TLMC is not a widely used and standardized instrument, we first present statistical data regarding scale reliability and normality of the distribution of test scores. Using the current sample, we found that the internal-consistency reliability of the TLMC, as measured by Cronbach's alpha, is 0.84, which can be regarded as satisfactory given the diversity of literary metaphors included in the test. Results of the Kolmogorov–Smirnov test with the Lilliefors significance correction indicate that the obtained distribution of scores does not deviate markedly from the normal distribution ( $D=.058$ ,  $p=.20$ ).

***Metaphor comprehension and verbal intelligence.*** Is literary metaphor comprehension related to verbal intelligence as assessed by a standardized IQ-test? Our results say: very much so. We obtained a fairly high and statistically significant correlation between subjects' overall IQ on the Verbal Series and their score on our Test of Literary Metaphor Comprehension, a correlation of the size  $r=.748$ ,  $p<.001$ .

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<sup>4</sup> Subjects were not rating any one particular metaphor, but rather the whole concept of using metaphoric expressions to communicate ideas and observations.

By examining the correlations between the TLMC and the 5 subtests of the Verbal Series (presented in Table 1), we found that all correlations were positive and statistically significant at the .01 level. More importantly, it should be noted that correlations between the TLMC and two VS subtests – namely, Proverb Comprehension and Logical Memory – were actually higher ( $r=.666$ ,  $p<.001$  and  $r=.660$ ,  $p<.001$ , respectively) than correlations found among the 5 subtests of the Verbal Series. As would be expected, the TLMC yielded the highest correlation with Proverb Comprehension (in fact, this correlation is higher than any other between two cognitive tests included in the battery). This finding suggests that the two tests do tap a common skill of metaphor comprehension and interpretation.

*Table 1: Intercorrelations between the TLMC and the 5 subtests of VS*

	Logical Memory	Classification Skills	Proverb Comprehension	Verbal Analogies	Mixed-up Sentences Compreh.	Literary Metaphor Compreh.
Logical Memory	1	0.601**	0.617**	0.547**	0.571**	<b>0.660**</b>
Classification Skills		1	0.583**	0.643**	0.533**	0.574**
Proverb Comprehension			1	0.609**	0.546**	<b>0.666**</b>
Verbal Analogies				1	0.543**	0.584**
Mixed-up Sentences Comp.					1	0.556**

A regression analysis was performed to see how well metaphor comprehension can be predicted by the four subtests of the VS *not* assessing metaphoric ability per se (i.e., not involving any metaphors as items).<sup>5</sup> The optimal regression model, whereby 50% of the variance in TLMC scores can be explained ( $R^2=.507$ ), includes Logical Memory ( $\beta=.486$ ;  $t=6.553$ ;  $p<.001$ ) and Verbal Analogies ( $\beta=.319$ ;  $t=4.299$ ;  $p<.001$ ) as predictors of Literary Metaphor Comprehension<sup>6</sup>. If we regard Logical Memory to be indicative of one's more general capacity to gain knowledge (see Carroll, 1997), thus also knowledge about the domains from which the elements of a particular metaphor might be drawn, it can be argued that our findings are in complete accord with the formerly presented analysis of the ingredients of metaphoric ability, which points to domain-specific knowledge and analogical reasoning as the prerequisite skills for novel metaphor comprehension. In short, our results say: the better your capacity to gain knowledge and your analogical reasoning skills, the more likely you are to get the gist of literary metaphors.

<sup>5</sup> In other words, the Proverb Comprehension subtest was excluded from the analysis.

<sup>6</sup> The Mixed-up Sentences Comprehension Subtest was also found to be a significant predictor of Literary Metaphor Comprehension, but of lesser relative importance.



**Metaphor comprehension and personality traits.** Does a certain personality structure facilitate or impede literary metaphor comprehension? According to our results, there is a statistically significant small-to-medium correlation ( $r=.376$ ;  $p<.01$ ) between Metaphor Comprehension and the basic trait of Openness-to-Experience (see Table 2 below). This correlation is somewhat lower, but still significant when verbal intelligence is controlled for ( $r_{xy.z}=.283$ ;  $p = <.01$ ).

**Table 2: Correlations between the Big Five and (a) TLMC scores and (b) Verbal IQ**

	Neuroticism	Extraversion	Openness	Agreeableness	Conscient.
Literary Metaphor Compreh.	0.014	0.130	0.376**	-0.106	-0.099
Verbal IQ	-0.093	0.199*	0.261**	-0.193*	-0.088

Furthermore, when we analyzed the correlations between the TLMC and the 30 facets assessed by the NEO-PI-R, we found statistically significant positive correlations between Metaphor Comprehension and almost all facets of Openness-to-Experience (5 out of 6), namely those labeled Fantasy, Aesthetics, Feelings, Ideas, and Values; in addition, a significant positive correlation emerged between Metaphor Comprehension and the trait Assertiveness from the Extraversion domain (see Table 3).

**Table 3: Correlations between personality facets of NEO-PI-R and (a) TLMC and (b) verbal IQ**

		Literary Metaphor Comprehension	Verbal IQ
<b>Openness-to-Experience</b>	Fantasy	.352**	.216*
	Aesthetics	.219*	
	Feelings	.336**	.219*
	Ideas	.244**	.249**
	Values	.199*	.208*
<b>Extraversion</b>	Assertiveness	.180*	.270**
<b>Agreeableness</b>	Altruism		-.178*
	Modesty		-.221*

What these results imply is that literary metaphors are better understood by people who (a) exhibit a vivid imagination and a tendency to daydream – not as a means to escape from reality, but to enrich their inner world, (b) show an apprecia-

tion for the artistic and beautiful<sup>7</sup>, (c) are highly receptive to different emotions and experience more intense, more profound and more refined emotional reactions; (d) are intellectually curious and open to new, unconventional ideas; (e) are flexible in their views of the world and willing to reassess the socio-cultural values we live by; and (f) are assertive and dominant in their social relations. This is indeed the profile of a person one would expect to embrace and enjoy the playfulness of metaphoric language. But the important finding is that this personality profile is associated with better performance on the *cognitive* task of interpreting literary metaphors. Thus, the trait of Openness facilitates not only the enjoyment (see next section), but also the comprehension of literary metaphors. This is confirmed by the results of a multiple regression analysis, in which we investigated the degree to which the Big Five and the 4 subtests<sup>8</sup> of the VS predicted TLMC scores. The VS yielded two significant predictors – Logical Memory and Verbal Analogies, which, as noted earlier, explain 50% of the variance in TLMC scores ( $R^2=.507$ ). More importantly, there was a small, but statistically significant increase in the multiple coefficient of determination when Openness ( $R^2=.550$ ,  $\Delta R^2=.044$ ,  $p=.001$ ) and Extraversion ( $R^2=.567$ ,  $\Delta R^2=.016$ ,  $p<.05$ ) were entered as predictors; the two personality traits explain 6% of the variance in TLMC scores, independently of the two relevant subtests from the VS.

Another important finding is that the TLMC shows roughly the same “profile” of correlations with the domain of personality as does the VS – a standard test of verbal intelligence. However, unlike performance on the TLMC, performance on the Verbal Series shows small but statistically significant *negative* correlations with two facets from the basic domain of Agreeableness, namely Altruism and Modesty.

***The experience of literary metaphors.*** We now come to the question of the relationship between subjects’ comprehension and their subjective experience of literary metaphors. Before exploring this relation, we factor-analyzed the data from the ELMS (using a principal components analysis with Varimax rotation) to establish which dimensions of subjective experience the scale actually measured. We opted for a rotated factor solution in which three interpretable factors were extracted: the first is labeled “Appeal” and shows to what extent the subject experienced the metaphors as likable and pleasing; the second is labeled “Clarity” and indicates to what extent the subject perceived the metaphors as intelligible and definite in meaning; the third was labeled “Expressiveness” and designates to what extent the metaphors were perceived as conveying a deeper meaning and making a more powerful statement (see Table 4).

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<sup>7</sup> As in Kogan et al.’s study, the results indicate an association between metaphoric ability and aesthetic sensitivity.

<sup>8</sup> The Proverb Comprehension subtest was again excluded from the analysis.

Table 4: Item loadings on the three factors extracted from the ELMS

Factor 1: “Appeal” (22.77% of variance explained)		Factor 2: “Clarity” (15.76% of variance explained)		Factor 3: “Expressiveness” (14.09% of variance expl.)	
dear	.748	understandable	.755	expressive	.733
desirable	.718	clear	.749	rich	.684
good	.716	explicable	.703	deep	.674
positive	.695	lucid	.665	striking	.601
motivating	.690	definite	.653	complete	.582
dynamic	.652	familiar	.582	strong	.404
stimulating	.651				
sharp	.599				
full	.578				
pleasant	.511				

We then probed for correlations between these three dimensions and the subjects’ level of metaphor comprehension. Statistically significant correlations were found between TLMC scores and the factors of Clarity and Expressiveness. People who comprehend metaphors better indeed experience them as less difficult to see through, but nevertheless richer in meaning than people who exhibit lower levels of metaphor comprehension. It should be noted, however, that subjects with higher TLMC scores don’t necessarily like the metaphors any better than those subjects who scored lower on the TLMC, since no correlation was found between metaphor comprehension and the Appeal factor (see Table 5). Another multiple regression analysis was conducted to see whether any of the experience dimensions significantly predicted TLMC scores, above the level already predicted by the four subtests of the VS and the basic personality traits. The results of this analysis indicate that – along with Logical Memory, Verbal Analogies, Openness, and Extraversion – the factor of Clarity is another significant predictor of metaphor comprehension ( $\beta=.152$ ;  $t=2.573$ ;  $p=.011$ ). Together, these 5 variables explain 59% of the variance in TLMC scores ( $R^2=.588$ ).

Table 5: Correlations between TLMC and 3 dimensions of Experience of Literary Metaphors

	“Appeal”	“Clarity”	“Expressiveness”
<b>Literary Metaphor Comprehension</b>	.026	.239**	.203*

Finally, regarding the relationship between the subjective experience of metaphors and personality traits, the following results emerged: (a) literary metaphors are more *appealing* to subjects who score higher on Agreeableness, Openness, and Neu-

roticism; (b) they are found more *intelligible* (*clear in meaning*) by people who score higher on Openness, and (c) they are rated as more *expressive* by those who score higher on Extraversion and Neuroticism, but lower on Conscientiousness. Perhaps the most interesting finding here is the positive association between metaphor appreciation (Appeal) and three personality facets from the domain of Neuroticism: Depression, Impulsiveness and Vulnerability.

**Table 6: Statistically significant correlations between dimensions of the ELMS and the “Big 5”**

	“Appeal”	“Clarity”	“Expressiveness”
<b>Neuroticism</b>	.205*		.186*
<b>Extraversion</b>			.193*
<b>Openness-to-Experience</b>	.232**	.242**	
<b>Agreeableness</b>	.250**		
<b>Conscientiousness</b>			-.247**

## DISCUSSION AND CONCLUDING REMARKS

Contrary to Kogan et al.’s findings, our results indicate a tight connection between metaphor comprehension and standard tests of verbal intelligence. However, we are not inclined to interpret this as proof of intelligence affecting metaphoric ability, because the two should not be conceived of as separate entities. Novel metaphor comprehension *is* a particular facet in the range of our intellectual abilities, and not a peripheral one, given that it encompasses the capacity to gain knowledge and the capacity for abstraction and analogical insight as its underlying abilities. This is why we found Logical Memory and Analogical Reasoning to be significant predictors of Literary Metaphor Comprehension. In a nutshell, the basic conclusion regarding literary metaphor comprehension is that we should think of it as a complex, higher-order ability central to verbal intelligence.

The Test of Literary Metaphor Comprehension designed in this study has proven itself an instrument to be reckoned with when assessing verbal intelligence. It deserves to be further explored and perhaps standardized as a test of verbal ability on account of its high correlation with the Verbal Series, but also on account of the fact that its personality correlates are much the same as those of any approved IQ-test (IQ is usually found to be significantly positively correlated with Openness; see for instance Austin & Deary, 2002). The TLMC has even shown a specific advantage over the VS in that it *does not particularly favor* the more competitive (not just assertive, but less agreeable) subjects – those who score lower on Altruism and Modesty; instead, the TLMC *favors more strongly* those subjects who exhibit higher

levels of aesthetic and intrapersonal sensitivity (i.e. those who score higher on Fantasy, Aesthetics and Feelings).

Second, regarding the connection between metaphor comprehension, personality traits and the subjective experience of literary metaphors, the following conclusions can be drawn from our findings: people who are better at interpreting literary metaphors do not report liking them any more than do people who have a harder time deciphering them; the former are, however, the ones who are more cognizant not only of the denotations, but also of the connotations – the expressiveness and intricacy – of metaphoric language. The Clarity and Expressiveness scales of the ELMS can thus be regarded as crude self-report measures of metaphor comprehension.

More importantly, our results point to the fact that it takes a person who is more open-to-experience and in a specific sense more neurotic/hypersensitive (i.e., more impulsive, vulnerable, and depressed) to fully understand and appreciate a literary metaphor (it seems that for a metaphor to get under your skin, you have to be a rather thin-skinned person, besides being an open-minded one). Furthermore, the paradoxical blend of higher Neuroticism and lower Conscientiousness found to correlate significantly with the recognition of the metaphors' Expressiveness is reminiscent of the paradoxical personality structure usually ascribed to creative individuals (Selby et al., 2005). Thus, a possible direction for future research would be to investigate whether and how the TLMC and ELMS can be used to identify creativity-oriented persons.

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## APPENDIX

### *Sample items from the TLMC*

Series 1, items 3 and 5

What does the bolded text refer to? Give your interpretation of the expressions in bold!	Answer (interpretation)
We tend to embellish our thoughts and hide the <b>adders creeping inside of us</b> .	
Time is jealous of you, and <b>wages war against your lillies and roses</b> .	

Series 2, item 10

Give your interpretation of the passage below!	Answer (interpretation)
The canker galls the infants of the spring, too oft before their buttons be disclosed; and in the morn and liquid dew of youth contagious blastments are most imminent.	

REZIME

**ŠTA FIGURIŠE U SHVATANJU FIGURATIVNOG:  
INDIVIDUALNE RAZLIKE U RAZUMEVANJU KNJIŽEVNIH  
METAFORA**

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Polazište za formulaciju problema u ovom radu činila je studija Kogana i saradnika iz 1980. godine, u kojoj je utvrđeno da razumevanje metafora značajno pozitivno korelira sa estetskom osetljivošću, odnosno divergentnim mišljenjem, ali ne i sa verbalnom inteligencijom. Ovaj nalaz može se dovesti u pitanje sa stanovišta kognitivnih i razvojnih studija metaforičkog mišljenja koje sugerišu da razumevanje novih metafora predstavlja intelektualno izazovan zadatak koji zahteva analoško rezonovanje i aktivaciju domeno-specifičnih znanja. Osnovni cilj našeg istraživanja bio je da preispita vezu između razumevanja metafora i određenih kvaliteta intelekta i ličnosti, tj. da utvrdi da li su i kako individualne razlike u razumevanju književnih metafora povezane sa razlikama u verbalnim sposobnostima i bazičnim crtama ličnosti.

Istraživanje je sprovedeno na uzorku od 131 srednjoškolca, starosti 17 godina. Svi učenici ispitani su Stevanovićevom verbalnom serijom, inventarom NEO-PI-R, te Testom razumevanja književnih metafora (TRKM) i Skalom doživljaja književnih metafora (DKM), konstruisanim za potrebe ovog istraživanja. TRKM sadrži 28 ajtema – odlomaka preuzetih iz različitih književnih dela, a zadatak ispitanika je da samostalno formuliše interpretaciju metaforičkog iskaza sadržanog u svakom ajtemu. Instrument DKM sadrži 24 parova prideva (npr. puno-prazno, statično-dinamično) na osnovu kojih ispitanik na 7-stepenoj skali procenjuje svoj doživljaj književnih metafora kao specifičnog načina da se izrazi neka ideja ili ukaže na određenu pojavu.

Učinak na TRKM pokazuje visoku pozitivnu korelaciju sa IQ-om na Verbalnoj seriji ( $r=.75$ ,  $p=.000$ ), te korelacije visokog ili srednjeg intenziteta sa pojedinim subtestovima ove baterije (za sve korelacije  $p<.01$ ). Kao što se moglo predvideti, najjaču korelaciju sa TRKM pokazuje subtest Tumačenje poslovice, koji od ispitanika takođe zahteva svojevrsnu analizu metaforičkih iskaza. Regresionom analizom je utvrđeno da preostala četiri subtesta objašnjavaju oko 53% varijanse u skorovima na TRKM, pri čemu se kao najbolji prediktori razumevanja metafora izdvajaju Logičko pamćenje i Verbalne analogije (samo ova dva testa objašnjavaju 50% varijanse u skorovima na TRKM). Statistički značajna pozitivna korelacija



( $r=.38$ ,  $p<.01$ ) utvrđena je i između skorova na TRKM i bazične dimenzije Otvorenosti za iskustva (razumevanje metafora značajno pozitivno korelira sa facetama Fantazija, Emocije, Ideje, Vrednosti i Estetika). Takođe, postoji niska, ali značajna pozitivna korelacija između TRKM i crte Asertivnosti iz domena Ekstraverzije ( $r=.18$ ,  $p<.05$ ). Bazične dimenzije Otvorenost i Ekstraverzija objašnjavaju 6% varijanse u skorovima na TRKM (nezavisno od verbalne inteligencije). Faktorska analiza odgovora na DKM pokazuje da ova skala registruje tri dimenzije doživljaja književnih metafora: dimenzija "Privlačnosti" odnosi se na to koliko ispitanik doživljava metafore kao dopadljive i prijatne (ovaj faktor objašnjava oko 23% varijanse); dimenzija "Jasnoće" indikuje u kojoj meri ispitanik doživljava značenje metafore kao dokučivo i jasno određeno (16% varijanse); najzad, dimenzija "Ekspresivnosti" govori o tome koliko ispitanik procenjuje metaforu kao bogatu značenjem (14% varijanse). Postoji statistički značajna pozitivna korelacija između skora na TRKM i dimenzije Jasnoće ( $r=.24$ ,  $p<.01$ ), odnosno Ekspresivnosti ( $r=.20$ ,  $p<.05$ ). Procenjena Privlačnost metafora pozitivno korelira sa Dobrodušnošću ( $r=.25$ ,  $p<.01$ ), Otvorenošću ( $r=.23$ ,  $p<.01$ ) i Neuroticizmom ( $r=.20$ ,  $p<.05$ ); procenjena Jasnoća metafora pozitivno korelira sa Otvorenošću ( $r=.24$ ,  $p<.01$ ); procenjena Ekspresivnost metafora pozitivno korelira sa Ekstraverzijom ( $r=.19$ ,  $p<.05$ ) i Neuroticizmom ( $r=.19$ ,  $p<.05$ ), a negativno sa Savesnošću ( $r=-.25$ ,  $p<.01$ ).

Suprotno nalazima Kogana i saradnika, naši rezultati upućuju na tesnu povezanost "metaforičke sposobnosti" i verbalne inteligencije, dajući time podršku tezi da razumevanje novih metafora predstavlja punopravnu facetu u spektru intelektualnih sposobnosti – kognitivnu veštinu višeg reda koja počiva na kapacitetu za pamćenje verbalnog materijala i kapacitetu za analoško rezonovanje. Test razumevanja književnih metafora konstruisan u okviru ovog istraživanja pokazuje se kao legitimna mera verbalne inteligencije, ne samo na osnovu svoje visoke korelacije sa Verbalnom serijom, već i na osnovu činjenice da se spram varijabli iz domena ličnosti ovaj test "ponaša" kao standardni test inteligencije (gde veći učinak ide uz veću otvorenost i asertivnost). Rezultati istraživanja osim toga upućuju na zaključak da veća otvorenost za iskustva podrazumeva kako bolje razumevanje, tako i veće uživanje u književnim metaforama. Međutim, čini se da potpun doživljaj estetske vrednosti i slojevitosti značenja književnih metafora pored otvorenosti za iskustva podrazumeva izvesnu dozu preosetljivosti (veći neuroticizam) i manju sklonost samoobuzdavanju (manju savesnost) – složaj crta koji se obično pripisuje kreativnim osobama.

***Ključne reči:*** *razumevanje metafora, individualne razlike, verbalna inteligencija, bazične crte ličnosti (Big Five).*