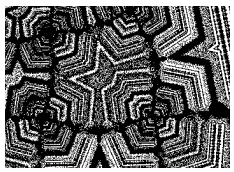

ADOLESCENT PERSONALITY AND SELF-ESTEEM – AN ANALYSIS OF SELF-REPORTS AND PARENTAL-RATINGS

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This article describes the factor structure of IPIP Big-Five factor markers in self-reports and parental-ratings of a sample of adolescents in Croatia. A large sample of adolescents (N = 706) used the revised Croatian version of the 50-item IPIP Big-Five inventory to describe themselves, and they were also described by 592 of their parents on the same instrument. The adolescents also used the translated version of Rosenberg's Self-Esteem Scale to describe themselves and they were also described by their parents on the same measure. In separate analyses of both self--reports and parental-ratings, the IPIP measures showed clear five-factor orthogonal structures that were nearly identical to the Croatian adult structure and American structure. The relations of self-reports and the parental-ratings on IPIP Big-Five markers revealed a clear one-to-one relation between all five corresponding factors. In separate analyses of both self-reports and parental-ratings, the self-esteem measures showed a close correspondence to the factor structure of the original form and the single factor of self-esteem was highly correspondent between those two data sets. Five personality factors were moderately, however consistently, related to self-esteem. The relation between the dimension of Emotional Instability and self-esteem was the strongest while the relation of Agreeableness and self-esteem was the weakest.

Key words: Big-Five, adolescents, self-esteem, self-reports, parental-ratings

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INTRODUCTION

Validity of the Big-Five model of personality (Goldberg, 1993) was supported by many taxonomies based on large and representative personality-descriptive terms (De Raad, 1992; Goldberg, 1990, 1992; Hřebíčková et al., 1994; Mlačić & Ostendorf, 2005; Ostendorf, 1990; Szarota, 1996); by studies of different rating inventories, groups of raters and rating formats (Goldberg, 1992; Mlačić & Knezović, 1997; Rolland, 1993) and personality questionnaires (McCrae & Costa, 1987; Ostendorf & Angleitner, 1992). However, until the last years, the empirical studies of the Big-Five were almost exclusively based on adult subjects (Baker et al., 2004). The early attempts to assess individual differences in children in the terms of personality structure were rare (Digman, 1963, 1972, i.e.) and yielded inconsistent results. Nevertheless, the body of research that extends the five factors into earlier years, such as adolescence and childhood has been growing in the recent years (Halverson et al., 2003; John et al., 1994; Rothbart et al., 2000; Measelle et al., 2005; Shiner, 1998; 2000).

Particularly important is the work of Mervielde and colleagues (Mervielde, 1994; Mervielde, Buyst & De Fruyt, 1995; Mervielde & De Fruyt, 1999, 2000) that developed the Hierarchical Personality Inventory for Children (HiPIC), especially in the light of the fact that one of the most common issues concerning the measurement of personality in children and adolescents was the choice or the construction of the appropriate instrument (Robins et al., 1994). However, the dimensions of HiPIC (Mervielde & De Fruyt, 2002) are: Conscientiousness, Benevolence, Extraversion, Emotional Stability and Imagination and differ somewhat from the original Big--Five dimensions.

During the last years, Goldberg (1999) proposed a scientific collaboratory for the development of advanced measures of personality and other individual differences. Goldberg (1999) developed a series of instruments, dubbed the IPIP instruments (International Personality Item Pool) with intent to provide rapid access to measures of individual differences in the public domain, developed conjointly among scientists world--wide. Various forms of IPIP were developed with intent to represent a common item format for cross-national comparisons of individual differences (Goldberg, 1999). The development of such an item format should serve at least three functions (Goldberg, 1999): 1) to represent a measure of the general framework for a comprehensive structure of phenotypic personality attributes, 2) to represent an item format that is more contextualized and longer than trait adjectives and 3) to represent a rapid and effective mode of communication a-

mong world-wide personality researchers via Internet. The item format that served as a basis for the pool of IPIP items consists of short verbal phrases (e.g., Start conversations, Am interested in people, Follow directions etc). The international collaboration concerning the IPIP effort (translation of items and using them in research) has become very fruitful in the last years, with current work in 30 cultures, including diverse languages from French, German and Italian to Hebrew, Welsh and Vietnamese (Goldberg, 2006). Translations of the IPIP version of the Big-Five markers are now available in Arabic, Bulgarian, Chinese, Croatian, German, Hungarian, Korean, Norwegian, Persian, Polish, Russian, Spanish, Swedish, and Welsh (Mlačić & Goldberg, 2007).

Baker et al. (2004) developed an IPIP-based measure to investigate convergent and discriminant validity of the Big--Five model in a sample of adolescents using three sets of raters: self-reports, peer– and teacher-ratings, and found similar patterns in the three data sets, with the exception of Emotional Stability. However, it is important to stress that Baker et al. (2004) version of IPIP instrument differed from the IPIP Big--Five markers.

Following the study with IPIP Big-Five markers in a sample of students (Mlačić & Goldberg, 2007) that provided substantial support for the generalizability of the five-factor IPIP--structure in a Croatian context, we deemed that it might be useful to develop a version of the IPIP Big-Five markers for use with younger subjects, such as adolescents. We were also interested in relating that measure in a sample of adolescents with self-esteem, i.e. the construct that has been frequently investigated in adolescence (Chubb et al., 1997; Marsh, 1989; Robins et al., 1999, 2002; to name but a few). Self-esteem has been regarded important since the beginning of scientific psychology (Leary, 1999) and is defined as the value that people place on themselves (Baumeister et al., 2003). The term of self--esteem is used in three ways: as a global self-esteem, as a feeling of self-worth and as a self-evaluation (Brown et al., 2001). Global self-esteem, or trait self-esteem is considered stable across time and situations (Brown et al., 2001). The most widely used measure of global self-esteem is Rosenberg's (1965) Self-Esteem Scale (Baumeister et al., 2003).

According to Robins et al. (2001), understanding the relation between self-esteem and personality is important because these two constructs are likely to share common developmental roots and can influence each other. Furthermore, the relation between self-esteem and the five-factor model is important for personality measurement and because of the FFM links with many important variables such as job perfor-

mance, academic achievement, delinquency, personality disorders etc. (Robins et al., 2001). Robins et al. (2001) tested the hypothesis that self-esteem will be most strongly related to the FFM dimensions with strong affective component, such as Extraversion and Neuroticism, but with mixed results. Indeed, self-esteem was most strongly related to Neuroticism and Extraversion, however self-esteem also correlated significantly with all other FFM dimensions, i.e. Conscientiousness, Openness to Experience and Agreeableness.

AIM OF THE STUDY

The primary aim of this study was to verify the five-factor structure of IPIP Big-Five factor markers (Goldberg, 1999; Mlačić & Goldberg, 2007) in a sample of Croatian adolescents, both in self-reports and parental-ratings, and to compare the resulting factor structures. An additional aim was to investigate the relations between the Croatian IPIP measures and a measure of self-esteem (Rosenberg, 1965) in a sample of Croatian adolescents. This study was a part of a larger research project that aims to develop a comprehensive taxonomy of Croatian personality-descriptive terms (Mlačić & Ostendorf, 2005).[1]

The specific problems were:

1. To investigate the factor structure of a short form of IPIP Big-Five factor-markers for self-reports and parental-ratings of Croatian adolescents, respectively.

2. To investigate the relations between the factor structures of the self-reports and parental-ratings of Croatian adolescents, using the short form of IPIP Big-Five factor markers.

3. To investigate the factor structure of Rosenberg's Self--Esteem Scale for self-reports and parental-ratings of Croatian adolescents, respectively.

4. To investigate the relations between the factor structures of Rosenberg's Self-Esteem Scale for self-reports and parental-ratings of Croatian adolescents, respectively.

5. To investigate the relations between the factor structures of IPIP Big-Five factor markers and Rosenberg's Self--Esteem Scale for self-reports and parental-ratings of Croatian adolescents, respectively.

[1] Funds for this research have been provided by Grant 194-1941558-1530 (Personality traits, natural language and cognitive development) from the Ministry of Science, Education, and Sports in Croatia.

METHOD

Research participants

Two samples of participants were recruited for this study, one for self-reports and the other for descriptions of these targets by their parents or close members of the family. For convenience, we will refer to the latter as parental-ratings. The self--reports were provided by 706 high school students from three

high schools in two Croatian cities (Zagreb and Požega). That sample consisted of 383 females and 323 males, their ages ranged from 14 to 19 years, with a mean of 16.9 and a standard deviation of 1.1. The parental-ratings were provided by 592 parents or other close members of the family of the target adolescents from the self-report sample (463 females, 129 males); their ages ranged from 17 to 77 years, with a mean of 44.6 years and a standard deviation of 5.4 years. The majority of the subjects from the parental-rating sample were the mothers of the target subjects from the self-rating sample (459), followed by fathers (127), and grandmothers, grandfathers and sisters (1, respectively). Two subjects from the parental--rating sample did not indicate their relation to the adolescent from the self-rating sample. Each adolescent was rated by one parent. Altogether there were 592 matched pairs of ratings (a self-description paired with a parental-description).

Instruments

The first instrument used in this study was a Croatian translation (Mlačić & Goldberg, 2007) of the IPIP Big-Five domains (Goldberg, 1999), with 50 items (short form). The IPIP items were administered with a 1 to 5 Likert-type scale, ranging from 1 = Very Inaccurate to 5 = Very Accurate, as in the original instrument (Goldberg, 1999) and in the Croatian translation (Mlačić & Goldberg, 2007). In a previous study of the Croatian translation of the IPIP instrument that used a sample of students (Mlačić & Goldberg, 2007), the internal consistency reliability estimates (coefficient alpha) of the short form in the self-report data set for each of the five domains were: .87 (Factor I: Extraversion), .79 (Factor II: Agreeableness), .81 (Factor III: Conscientiousness), .88 (Factor IV: Emotional Instability), and .79 (Factor V: Intellect/Imagination). The internal consistency reliability estimates (coefficient alpha) of the short form in the peer-rating data set in the same study (Mlačić & Goldberg, 2007) were: .85 (Factor I: Extraversion), .83 (Factor II: Agreeableness), .83 (Factor III: Conscientiousness), .84 (Factor IV: Emotional Instability), and .80 (Factor V: Intellect/Imagination). The number of items per pole was: I+ (5), I– (5); II+ (6), II– (4); III+ (6), III– (4); IV+ (2), IV– (8); and V+ (7), V– (3).

The other instrument used in this study was Rosenberg's (1965) Self-Esteem Scale with ten items that were administered with a 1 to 5 Likert-type scale, ranging from 1 = Very Inaccurate to 5 = Very Accurate. Previous research with Rosenberg's Self-Esteem Scale in Croatia that used samples of students (Bezinović, 1988; Burušić et al., 2002) showed a close correspondence to the factor structure of the original form, with internal consistency reliability estimates (coefficient alpha) for the domain of Self-Esteem of .84 and .88, respectively.

Procedure

Given the fact that the original IPIP instruments were developed in a study that used the American community adult sample (Goldberg, 2006); it was reasonable to assume that the younger groups of subjects such as children or adolescents might not understand the content of all the items from the IPIP pool. Therefore, we decided to check the content of the Croatian translation of 50 items from the IPIP Big-Five factor markers (short form) and to revise those items that could be incomprehensible to the adolescents. Moreover, we decided to revise 4 items that departed from the intended structure in a study with adult subjects in Croatia (Mlačić & Goldberg, 2007). Altogether, we revised the content of 25 items. Four of these revisions were substantial and related to the items that departed from the intended structure. An example of such a revision is the sentence "Do things according to plan" from the IPIP Conscientiousness pool that replaced the sentence "Am always prepared" which failed to load on the positive pole of Conscientiousness (Mlačić & Goldberg, 2007). The rest of the revisions were related only to slight changes in the content that could be more appropriate for the younger subject groups, while the overall meaning stayed the same. An example of that revision is the sentence "Know a lot of words" that replaced the sentence "Have a rich vocabulary".[2] After the revision, and since this IPIP instrument was intended for use with younger subjects, we dubbed this version the 50 IPIP Junior.

This research study was approved by the Croatian Ministry of Science, Education and Sports; and by the principals of the high schools that participated in the study. The participants in the self-report sample were approached at the beginning of the summer semester and asked to participate in the study. They were instructed to describe themselves as accurately as possible, using the instruments described above. Upon completion of the inventories, these participants were also provided with the same measures adapted for parental--ratings (third persons). They were instructed to take the instruments home and to give them to either their mother or father, depending on the opinion who "knows them best" and to return the instruments in a couple of days to their teacher. If the participants' mothers or fathers were not available, the adolescents were instructed to give the instruments to other close members of the family (grandmother, grandfather etc.). Nevertheless, the data showed that 99 per cent of the returned parental-ratings were made by mothers or fathers. The parents were asked to describe the target person using the same measures. Due to the possibility that close members of

[2] The original and revised forms of Croatian IPIP Big-Five factor markers are available from the authors upon request.

the family such as grandparents could be the primary caregivers of the target adolescents and since we did not want to interfere with the adolescents' opinion "who knows them best", we decided to include those raters in the sample of "parental ratings". Nevertheless, we reanalyzed the data that were provided by only mothers and fathers and the results were virtually the same.

RESULTS

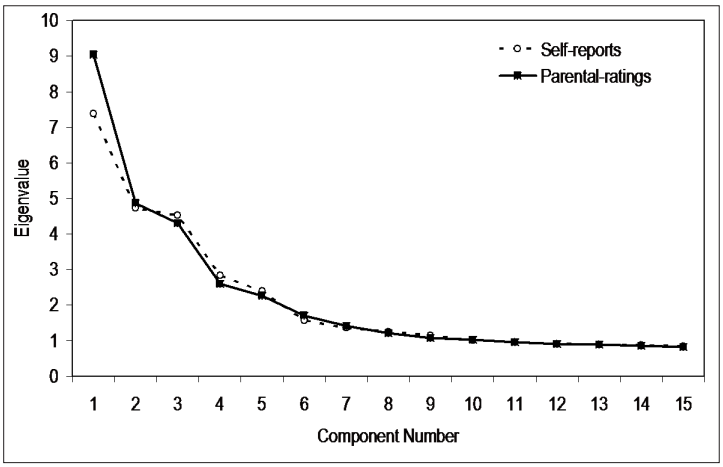
Factor structure of the 50 IPIP Junior items

Self-reports

Since one of the principal problems of this study pertained to the comparison of factor structures of IPIP self-reports and parental-ratings, those data sets were separately submitted to principal components analyses, followed by varimax rotation. Results from Scree tests (Cattell, 1966) were used as guidelines for determining the optimal number of factors to be retained.

When principal components were extracted from the correlations among the 50 IPIP Junior items in the self-report data set, there was a clear discontinuity in the sizes of the eigenvalues between the fifth and the sixth factors. Figure 1 presents a plot of the first 15 eigenvalues.

➲ FIGRUE 1
Self-reports and Parental-ratings on 50 IPIP Junior items



The factor loadings from a varimax rotation of these self-reports are presented in Table 1. The five factors explained 43.7% of the total variance. Of the 50 items, 48 (96%) loaded as expected based on the original findings in an American community sample (Goldberg, 2006); which is a slightly better result than the one obtained in a sample of Croatian students where 46 items loaded as expected (Mlačić & Goldberg, 2007).

➲ TABLE 1
Five-factor varimax-rotated loadings of the 50 IPIP Junior in the Self-reports (S) and Parental-ratings (P)

	E		A		C		ES-		I	
	S	P	S	P	S	P	S	P	S	P
IPIP1	*.58**	*.64**	.07	.14	-.04	-.02	-.03	-.10	.19	.13
IPIP6	*-.64**	*-.65**	-.11	-.07	.02	.10	-.04	-.02	.00	-.07
IPIP11	*.45**	*.49**	.21	.21	.05	.05	-.28	-.16	-.10	.02
IPIP16	*-.60**	*-.61**	-.19	-.26	-.06	-.04	.19	.19	.00	-.08
IPIP21	*.57**	*.63**	.09	.11	-.02	.10	-.01	.01	.24	.23
IPIP26	*-.52**	*-.51**	-.17	-.23	-.04	.02	.06	.03	*-.27*	*-.29*
IPIP31	*.67**	*.70**	.12	.18	.03	-.06	-.08	-.06	.08	.16
IPIP36	*-.59**	*-.53**	-.01	.04	.15	.14	-.08	-.09	-.04	.05
IPIP41	*.66**	*.63**	-.05	-.13	-.04	.03	.02	.00	.19	.17
IPIP46	*-.58**	*-.65**	-.06	.05	-.02	.04	.08	.17	-.11	.02
IPIP2	-.05	-.01	*-.67**	*-.53**	-.16	-.10	.00	.05	.05	-.06
IPIP7	.05	-.01	*.55**	*.62**	.16	.07	-.08	-.09	.01	.16
IPIP12	-.11	-.10	*-.71**	*-.69**	-.08	-.15	.02	.12	.06	-.02
IPIP17	.14	.10	*.53**	*.64**	.06	.13	.00	-.08	.10	.14
IPIP22	-.05	-.07	*-.65**	*-.56**	-.05	.05	-.05	.00	.02	-.11
IPIP27	.02	.09	*.59**	*.60**	.18	.19	-.06	-.06	.15	.20
IPIP32	-.24	-.28	*-.55**	*-.53**	-.14	.00	.09	.11	.06	-.11
IPIP37	.06	.10	*.64**	*.62**	.12	.06	-.02	-.08	.16	.20
IPIP42	.06	.03	*.50**	*.62**	.05	.15	.05	.02	.19	.15
IPIP47	.05	.10	*.64**	*.63**	.11	.10	-.05	-.10	.06	.03
IPIP3	-.05	-.03	.16	.09	*.73**	*.74**	.03	.05	.02	.06
IPIP8	.03	.07	.02	-.07	*-.69**	*-.76**	.15	.08	.03	.05
IPIP13	-.04	-.06	.17	.04	*.63**	*.55**	.00	-.05	.20	*.37*
IPIP18	.14	.06	-.19	-.20	*-.57**	*-.62**	.22	.20	.07	.05
IPIP23	-.03	.02	.23	.20	*.57**	*.63**	.02	-.05	-.07	.03
IPIP28	-.03	-.02	.02	.01	*-.64**	*-.78**	.18	.14	.03	.05
IPIP33	-.07	.00	.16	.09	*.71**	*.81**	-.01	-.01	.01	.02
IPIP38	-.06	.05	-.22	-.23	*-.60**	*-.55**	.10	.14	-.12	-.24
IPIP43	.08	.01	.09	.02	*.58**	*.56**	.04	-.03	.24	*.41*
IPIP48	.03	-.02	.09	.07	*.64**	*.63**	-.08	-.04	*.27*	*.39*
IPIP4	.07	.05	-.08	-.11	.01	-.04	*.80**	*.70**	-.14	-.07
IPIP9	*.40*	*.33*	.02	.06	.01	-.04	*-.46**	*-.50**	.05	-.01
IPIP14	*-.32*	-.28	.19	.03	-.06	.02	*.60**	*.65**	.03	-.03
IPIP19	.29	*.32*	-.13	.09	.10	.05	*-.43**	*-.39**	-.11	.02
IPIP24	.14	.14	-.21	-.12	.01	-.02	*.75**	*.74**	-.11	-.10
IPIP29	.07	.05	-.15	-.13	-.03	-.16	*.82**	*.80**	.10	-.06
IPIP34	-.06	-.06	-.07	-.15	-.15	-.14	*.72**	*.75**	-.03	-.13
IPIP39	-.08	-.13	.07	-.09	-.13	-.15	*.67**	*.70**	-.01	-.10
IPIP44	.08	.13	-.12	-.11	.03	-.11	*.78**	*.79**	.11	-.10
IPIP49	*-.32*	*-.37*	.08	-.13	-.18	-.10	*.66**	*.63**	.07	-.07
IPIP5	.22	.15	.02	.05	.12	.05	.07	.05	*.52**	*.63**
IPIP10	-.04	-.08	.01	-.06	-.10	-.04	.19	.23	*-.53**	*-.54**
IPIP15	.01	.18	.22	.15	-.21	-.15	.24*	.29*	.16	.25
IPIP20	.10	-.06	-.19	-.17	-.08	-.13	.08	.06	*-.42**	*-.51**
IPIP25	.23	.14	.05	.20	.00	.13	-.02	.02	*.66**	*.66**
IPIP30	-.17	-.23	-.23	-.21	.12	-.01	.04	.05	*-.45**	*-.50**

(Continued over page)

➲ TABLE 1
(continued)

	E		A		C		ES-		I	
	S	P	S	P	S	P	S	P	S	P
IPIP35	.17	.00	-.06	.16	.13	.05	-.07	-.12	*.55**	*.67**
IPIP40	.04	.01	.01	.15	.24	.16	.12	-.02	*.58**	*.65**
IPIP45	-.23	-.16	*.31*	.11	-.10	.03	*.38**	*.51**	*.36*	.24
IPIP50	.24	*.31*	.06	.11	-.09	-.02	-.06	.02	*.69**	*.61*

Note. S= self-reports (N=706), P= parental-ratings (N=592). Loadings over .3 are shown in italics. The highest factor loading for each variable is indicated with an asterisk (*). E, Extraversion; A, Agreeableness; C, Conscientiousness; ES-, Emotional Instability; I, Intellect.

All 10 of their intended items defined the factors of Extraversion, Agreeableness, Conscientiousness and Emotional Instability, whereas 8 of the intended items loaded most highly on the factors of Intellect. In total, only 2 items departed from the intended structure. The item "Daydream a lot about different things" which was intended to measure the positive pole of Intellect had no substantial loadings on any of the factors. Finally, the item "Frequently spend time reflecting on things" intended as a measure of the positive pole of Intellect loaded most highly on the factor of Emotional Instability with almost the same size of loading on the intended factor. Because the majority of the items (80%) for the domain of Emotional Stability are oriented towards the negative pole, the resulting factor from the analysis was also oriented towards the negative pole. Therefore, we labeled it as ES-, or Emotional Instability, as was the case in a study of Croatian students (Mlačić & Goldberg, 2007).

The results of a varimax rotation in Table 1 are grouped in such a way that we present 10 items intended to measure the factor of Extraversion, followed by 10 items intended to measure the factor of Agreeableness, 10 intended to measure the factor of Conscientiousness, 10 intended to measure Emotional Instability, and, finally 10 items intended to measure the factor of Intellect.

It is also noteworthy that, of those short-descriptive sentences that loaded as expected, the number of items with substantial secondary loadings (over .3) was very low, just 3. That indicates that the match between the intended structure and the obtained one is substantial.

Parental-ratings

When principal components were extracted from the correlations among the 50 IPIP Junior items in the parental-rating data set, there was again a clear discontinuity in the sizes of the eigenvalues between the fifth and the sixth factors, which is also shown in Figure 1. The factor loadings from a varimax rotation of the parental-ratings are also included in Table 1.

The five factors explained 46.2% of the total variance. Once more, of the 50 items, 48 (96%) loaded as expected which again represents a slightly better result than the one obtained in a peer-rating sample of Croatian students where 46 items loaded as expected (Mlačić & Goldberg, 2007). Once again, all 10 of their intended items defined the factors of Extraversion, Agreeableness, Conscientiousness and Emotional Instability, whereas 8 of the intended items loaded most highly on the factors of Intellect. In total, only 2 items departed from the intended structure, the same ones as in the analyses of the self-report data set. The item "Daydream a lot about different things" which was intended to measure the positive pole of Intellect had no substantial loadings on any of the factors. Finally, the item "Frequently spend time reflecting on things" intended as a measure of the positive pole of Intellect loaded most highly on the factor of Emotional Instability with almost the same size of loading on the intended factor. Of those short-descriptive sentences that loaded as expected, the number of items with substantial secondary loadings was 7, somewhat higher than for self-reports. That can indicate that the third-person ratings are somewhat more complex; however, judging by the sizes of the primary loadings, we can once more conclude that the match between the intended structure and the obtained one is substantial for the parental-ratings as well.

Reliabilities of the 50 IPIP Junior Scales in the Self-reports and the Parental-ratings

Table 2 shows the internal-consistency reliability estimates (Cronbach's coefficient alpha values) for the Big-Five domains in both analyses (self-reports and parental-ratings), respectively.

➲ TABLE 2
Internal-Consistency Reliability Estimates (Coefficient Alpha) for the 50 IPIP Junior Scales in Self-reports and Parental-ratings

Scale	Self-reports	Parental-ratings
Extraversion	.83	.83
Agreeableness	.84	.83
Conscientiousness	.86	.88
Emotional Instability	.88	.89
Intellect	.71	.77

Note. Self-reports (N = 706), Parental-ratings (N = 592).

All the alpha coefficients had acceptable value that were somewhat lower for the Intellect scales, and probably caused by the fact that two items intended to measure Intellect departed from the intended structure, both in self-report and parental-rating data sets. Nevertheless, alpha coefficients ranged from .71 to .89, with the average value of .82 for the self-ratings and .84 for the parental-ratings. The average values are very similar to those obtained for 50 IPIP in a sample of Cro-

atian students (Mlačić & Goldberg, 2007) that were .83 both for the self-report and the peer-rating data set. These values are also comparable to those reported by Goldberg (2006) in an American community adult sample.

Correspondence of the 50 IPIP Junior factors across Self-reports and Parental-ratings

To evaluate the factorial similarity between the corresponding factors across groups of judges (self versus parents) we calculated the congruence coefficients (Tucker's Φ, 1951) between the factors derived in the self-report data set and the parental-ratings data set. These congruence coefficients are reported in Table 3.

➲ TABLE 3
Congruence Coefficients between the Corresponding Factors in the Self--reports and the Parental-ratings

Factor	Φ
Extraversion	.98
Agreeableness	.95
Conscientiousness	.97
Emotional Instability	.98
Intellect	.95

Note. Self-reports (N = 706), Parental-ratings (N = 592).

Table 3 shows that all the corresponding congruence coefficients were high, ranging from .95 to .98, and averaging .97. That finding completely replicates the results of self-reports and peer-ratings in a sample of Croatian students (Mlačić & Goldberg, 2007). The above-mentioned results confirm the robustness of the five-factor structures across the self--reports and the parental-ratings in the sample of Croatian adolescents.

To evaluate the convergent and discriminant validity of the five 50 IPIP Junior factors across two groups of judges, we calculated correlations between the factor scores derived from the five varimax-rotated self-report and parental-rating factors. These correlations are reported in Table 4.

U TABLE 4
Correlations between 50 IPIP Junior five factors across Self--reports and Parental--ratings

	Parental-ratings				
Self--reports	Extraversion	Agreeableness	Conscientiousness	Emotional Instability	Intellect
Extraversion	*.55***	-.08	-.06	.00	.02
Agreeableness	.09*	*.37**	-.04	.03	-.05
Conscientiousness	.01	-.05	*.56***	.03	.03
Emotional Instability	-.03	.02	-.01	*.50***	.04
Intellect	.02	-.08	-.00	-.05	*.41***

Note. The highest correlation for each factor is printed in italic (N=592).
*p<0.05, **p<0.01

The convergent validities or monotrait-heteromethod coefficients (Campbell & Fiske, 1959) of the five 50 IPIP Junior factors are reported in the main diagonal of the correlation matrix. A comparison of these coefficients with the heterotrait-heteromethod correlations shows that all convergent validity coefficients largely exceeded the relevant heterotrait correlations according to the first criterion of discriminant validity proposed by Campbell and Fiske (1959). All convergent validity coefficients were significantly different from zero and the mean convergent validity of the five factors across two groups of judges amounted to .48, exactly the same as the five Croatian emic (indigenous) factors, i.e. the factors derived from a representative sample of Croatian language personality-descriptive adjectives, across self– and peer-ratings (Mlačić & Ostendorf, 2005), and just a little bit lower than the five IPIP factors in the sample of Croatian students (Mlačić & Goldberg, 2007).

Table 4 shows that the convergent validity coefficients for the factors of Extraversion, Conscientiousness and Emotional Instability were generally higher than the other two, with the average value of .54. The convergent validities for the factors of Agreeableness, and Intellect had the average value of .39. This finding is similar to those found in the study of IPIP factors in a sample of Croatian students (Mlačić & Goldberg, 2007) and in the study of Croatian emic personality dimensions (Mlačić & Ostendorf, 2005). However, in those two studies the convergent validities for the factors of Extraversion and Conscientiousness were generally higher and averaged over .60. Nevertheless, it is important to note that in those two studies the average age of two groups of judges was much more similar than in this study, and that might be one of the factors accounting for the higher values of convergent validities for the factors of Extraversion and Conscientiousness in the previous studies (Mlačić & Goldberg, 2007; Mlačić & Ostendorf, 2005). Funder and Colvin (1997) noted that there are four categories of potential moderators for self-other agreement: good judge, good target, good trait and good information. Judging by the results of this study, we can conclude that the dimensions of Extraversion and Conscientiousness, and to some extent Emotional Instability are the "good traits" eliciting higher amounts of self-parent agreement. This finding is again similar to those found in the study of IPIP factors in a sample of Croatian students (Mlačić & Goldberg, 2007), and in the study of Croatian emic personality dimensions (Mlačić & Ostendorf, 2005).

None of the heterotrait correlations approximated the validity coefficients reported in Table 4. Only one heterotrait correlation between self-reported Agreeableness and parent-re-

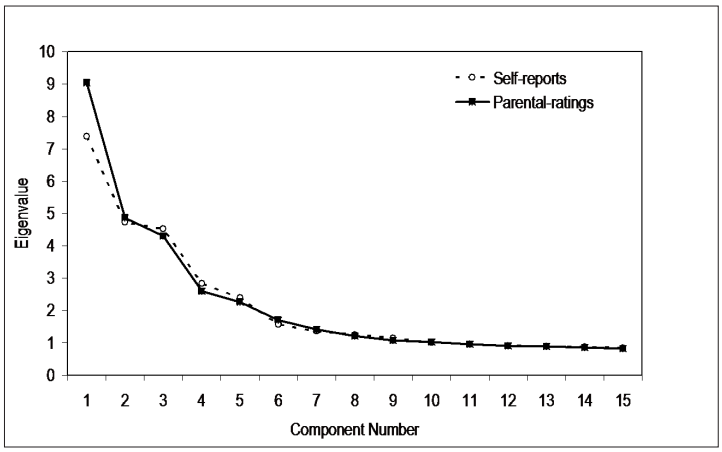
ported Extraversion had the value of .09 and reached the $p < .05$ significance level. We can therefore conclude that the findings from this research yield strong evidence for the convergent and discriminant validity of five IPIP factors across self--reports and parental-ratings. These results support the use of IPIP in future research when the target persons are adolescents.

Factor structure of the 10 Self-Esteem items

Self-reports

When principal components were extracted from the correlations among the 10 Rosenberg's Self-Esteem items in the self--report data set, the scree test indicated a discontinuity in the sizes of the eigenvalues between the second and the third factors. Figure 2 presents a plot of the 10 eigenvalues. However, the inspection of the content of those two factors revealed that they represented the method factors, i.e., one factor grouped the items keyed in the positive direction, and the other items keyed in the negative direction of the self-esteem construct. The uni or bi-dimensionality of the self-esteem construct has been the debate in many articles (Carmines & Zeller, 1979; Corwyn, 2000; Goldsmith, 1986; Horan et al., 2003; Kaplan & Pokorny, 1969; Marsh, 1996; Tomas & Oliver, 1999). However, Tomas & Oliver (1999) tested nine possible models that could be obtained through the factor analysis of Rosenberg's Self-Esteem Scale (1965) and concluded that the hypothesis of unidimensionality of self-esteem, as represented in Rosenberg's scale is acceptable. Therefore, we extracted only one factor.

➲ FIGRUE 2
Self-reports and Parental-ratings on 10 Self-Esteem items



The factor loadings from a single factor of self-reported self-esteem are presented in Table 5. The order of items in table 5 reflects their order in the original instrument (Rosenberg, 1965). That factor explained 47.1% of the total variance

and all 10 items loaded substantially on that single factor with the sizes of loadings from .57 to .79, supporting evidence for the unidimensionality of Rosenberg's Self-Esteem Scale in the self-report data of Croatian adolescents.

➲ TABLE 5
A single factor loadings of the 10 Rosenberg's Self--Esteem Scale in the Self-reports (S) and Parental-ratings (P)

Item	Self-reported Self-esteem	Parental-reported Self-esteem
ROS1	*.71*	*.64*
ROS2	*-.75*	*-.77*
ROS3	*.66*	*.65*
ROS4	*.61*	*.49*
ROS5	*-.74*	*-.69*
ROS6	*-.72*	*-.76*
ROS7	*.66*	*.70*
ROS8	*-.57*	*-.51*
ROS9	*-.79*	*-.78*
ROS10	*.63*	*.59*

Note. S= self-reports (N=706), P= parental ratings (N=592). Loadings over .3 are shown in italic.

Parental-ratings

When principal components were extracted from the correlations among the 10 Rosenberg's Self-Esteem items in the parental-rating data set, the scree test again indicated a discontinuity in the sizes of the eigenvalues between the second and the third factors, which is also shown in Figure 2. The inspection of the content of those two factors revealed the same effect as for the self-reports: positive keyed items grouped on one factor, and the negative keyed items formed a second factor. Therefore, we again extracted only one factor and the factor loadings from a single factor of self-esteem parental-ratings are also presented in Table 5.

That factor explained 44.1% of the total variance and all 10 items loaded substantially on that single factor with the sizes of loadings from .49 to .78, similar as in the self-reports.

Reliabilities of the 10 Rosenberg's Self-Esteem Scale in the Self-reports and the Parental-ratings; Correspondence of Self--Esteem factors across Self-reports and Parental-ratings

Since we decided to extract only one factor from self-esteem items for the self-reports and the parental-rating data sets, respectively; it is sufficient to state that the internal-consistency reliability estimates (Cronbach's coefficient alpha values) for the self-esteem scale in both analyses reached acceptable values, .87 for the self-reports and .86 for the parental-ratings, similar to the value in a sample of Croatian students (Burušić et al., 2002).

The congruence coefficient between the self-esteem factors derived in the self-report data set and the parental-ratings data set was also high and reached the value of .997.

The correlation between the factor scores derived from a single self-report and parental-rating self-esteem factors reached the value of .47, and was significant at the $p < .01$ level. The value of that correlation is very similar to the average value of self-parent convergent correlations for the Big-Five domains, indicating a similar level of agreement between adolescents and the parents for five personality dimensions and for self-esteem.

Relations between the factor structures of IPIP Big-Five factor markers and Rosenberg's Self-Esteem Scale

To evaluate the relations between the Big-Five dimensions and self-esteem, we calculated correlations between the factor scores derived from the five 50 IPIP Junior factors and a single factor of 10 Rosenberg's Self-Esteem items for the self-report and parental-ratings data sets, respectively. These correlations are reported in Table 6.

➲ TABLE 6
Correlations between the 50 IPIP Junior five factors and a single factor of Rosenberg's Self-Esteem Scale in the Self-reports and Parental-ratings

Self-reports, 50 IPIP Junior	Self-reports, Rosenberg's Self-Esteem
Extraversion	.34**
Agreeableness	.03
Conscientiousness	.25**
Emotional Instability	-.37**
Intellect	.27**
Parental-ratings, 50 IPIP Junior	**Parental-ratings, Rosenberg's Self-Esteem**
Extraversion	.25**
Agreeableness	.14**
Conscientiousness	.19**
Emotional Instability	-.34**
Intellect	.31**

Note. *p<0.05, **p<0.01. Self-reports (N=706), Parental-ratings (N=592).

As the table indicates, in the self-report data set, self-esteem correlated significantly with all the personality dimensions, except Agreeableness. The correlations were moderate and ranged from .25 between self-esteem and Conscientiousness, followed by .27 between self-esteem and Intellect, .34 between self-esteem and Extraversion, while the largest correlation was observed between self-esteem and Emotional Instability, and amounted to -.37. These correlations are com-

parable with the study of Robins et al. (2001) where the largest correlation was observed between self-esteem and Emotional Stability and the smallest one between self-esteem and Agreeableness. However, it is important to note that Robins et al. (2001) used a measure of the FFM (McCrae & Costa, 1999) where the fifth factor is Openness to Experience, unlike our measure of the Big-Five model (Goldberg, 1993) where the fifth factor is Intellect.

In the parental-ratings data set, self-esteem correlated significantly with all the personality dimensions, including Agreeableness. The correlations were again moderate and ranged from .14 between self-esteem and Agreeableness, followed by .19 between self-esteem and Conscientiousness, .25 between self-esteem and Extraversion, .31 between self-esteem and Intellect; and again, the largest correlation was observed between self-esteem and Emotional Instability which amounted to -.34. In comparison with the self-report data set, the rank order of correlations between self-esteem and personality dimensions was the same, with the exception of Extraversion and Intellect that switched places. However, since the sizes of correlations between self-esteem and the Big-Five in the two data sets are similar, we can also conclude that the overall relations between self-esteem and personality are also similar when adolescents rate themselves and when they are rated by their parents.

DISCUSSION

The present study provides substantial support for the generalizability of the five-factor 50 IPIP Junior structure in a sample of Croatian adolescents. In both data sets (self-reports and parental-ratings) a clear five-factor structure emerged. The five factors showed a remarkable match between the adolescent structure and the student structure (Mlačić & Goldberg, 2007); as well as between the Croatian adolescent structure and the original American adult community sample (Goldberg, 2006), both in self-reports and in parental-ratings. All but two items loaded as expected in both analyses. The congruence coefficients between adolescent self-reports and parental-ratings were high, and the reliabilities of the five factors were acceptable in both analyses. The convergent correlations of the five factors between the two data sets were reasonably high, especially for the dimensions of Extraversion, Conscientiousness, and Emotional Instability, taking into account average age difference between the two sets of raters. All of the above-mentioned evidence supports the robustness of the five-factor structures between self-reports and parental-ratings when the target persons are adolescents.

The results of this study also provide support for the generalizability of Rosenberg's self-esteem structure in a sample of Croatian adolescents. In both data sets all the items substantially loaded on a single factor of self-esteem. The results of this study were comparable with previous research in Croatia that used student samples (Bezinović, 1988; Burušić et al., 2002). Congruence coefficient between adolescent self-reports and parental-ratings of self-esteem was near-perfect, and the convergent correlation of self-esteem between the two data sets was comparable to average convergent validity of personality dimensions between the same data sets. As was the case with personality dimensions, the results of this study support the robustness of a single factor of self-esteem between self-reports and parental-ratings when the target persons are adolescents. It is important to note that, until recently, others' ratings of self-esteem were rare, since self-esteem by definition consists of people's opinions and evaluations of themselves (Baumeister et al., 2003). However, in the last years, there has been an increase of self-esteem ratings by other persons in research (Judge et al., 1998, 2000; Salmivalli et al., 1999; Strauss, 2005). The rationale for use of others' ratings of self-esteem is that different levels of self-esteem are associated with different patterns of self-presentation that are manifested in observable behaviors (Strauss, 2005). Others' perception of one's self-esteem could be the result of target's self-presentation and role constraints (Strauss, 2005). Concerning the level of agreement between self– and other-rated self-esteem, one hypothesis could be that evaluation contributes to correspondence of self-esteem across self-reports and other-ratings. However, since we have observed similar level of agreement between adolescents and the parents for five personality dimensions and for self-esteem, that "evaluative component" hypothesis needs a detailed examination in future studies.

The relations between self-esteem and the Big-Five factors yielded moderate, however, consistent correlations between personality dimensions and self-esteem. The dimension of Emotional Instability had the highest correlation with self-esteem, and the dimension of Agreeableness had the lowest correlation with self-esteem, both in self-reports and parental-ratings; comparable with the study of Robins et al. (2001).

These results represent the second remarkably successful validation of IPIP Big-Five factor markers in Croatia. After the first successful validation (Mlačić & Goldberg, 2007) in four data sets when students rated themselves and were rated by their peers with the long (100 items) and the short (50 items) version of the IPIP instruments; this study extended the use

of IPIP instruments to younger groups of subjects. Therefore, we made another step in comparing the characteristics of IPIP measures in frequently used highly educated samples with more representative samples from the total population under study. As a next step, it would be useful to compare the results from this study with even younger groups of subjects, i.e. children. A possible limitation of the present study is that we used the samples from relatively urban areas. It would also be useful to compare the results from this study with the samples from less urbanized areas. A further possible limitation of this study pertains to the level of abstraction in personality. We focused on the Big-Five dimensions and in future research it would be interesting to investigate self-other agreement at the facet level.

CONCLUSIONS

1. The factor analysis of a short form of IPIP Big-Five factor markers in a sample of Croatian adolescents yielded a clear five-factor structure, both in self-report data set and in the parental-rating data set. Five factors in the self-report data set accounted for 43.7% of the total variance and 46.2% of the total variance in the parental-rating data set.

2. The relations between the factor structures of the self-reports and the parental-ratings of Croatian adolescents with the short form of IPIP Big-Five markers revealed a clear one--to-one relation between all five corresponding factors.

3. The factor analysis of Rosenberg's Self-Esteem Scale in a sample of Croatian adolescents resulted with a single factor, both in the self-report data set and in the parental-rating data set.

That factor accounted for 47.1% of the total variance in the self-report data set and 44.1% of the total variance in the parental-rating data set.

4. The analysis of relations between the factor structures of Rosenberg's Self-Esteem Scale in the self-reports and the parental-ratings revealed a high correspondence of a single factor derived in both data sets.

5. The analyses of relations between the factor structures of IPIP Big-Five factor markers and Rosenberg's Self-Esteem Scale yielded consistent results; the strongest relation was observed between self-esteem and Emotional Instability and the weakest one between self-esteem and Agreeableness in both data sets.

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MLAČIĆ, B., MILAS, G.,
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ADOLESCENT...

Ličnost i samopoštovanje adolescenata: analiza samoprocjena i procjena roditelja

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Ovaj članak opisuje faktorsku strukturu IPIP markera velepetorog modela u samoprocjenama i procjenama roditelja na uzorku adolescenata u Hrvatskoj. Velik uzorak adolescenata (N=706) uporabio je revidiranu hrvatsku verziju IPIP inventara velepetorog modela od 50 čestica kako bi opisali sebe, a na istom su ih instrumentu opisala i 592 roditelja. Adolescenti su uporabili i prevedenu verziju Rosenbergove skale samopoštovanja kako bi opisali sebe, a na istoj su ih mjeri opisali i njihovi roditelji. U zasebnim analizama samoprocjena i procjena roditelja na mjerama IPIPa pokazale su se jasne peterofaktorske ortogonalne strukture, koje su se gotovo poklapale sa strukturama na hrvatskim odraslim osobama i s američkom strukturom. Analiza povezanosti samoprocjena i procjena roditelja na IPIP markerima velepetorog modela pokazala je nedvosmislene odnose između svih pet korespondentnih faktora. U zasebnim analizama samoprocjena i procjena roditelja na mjeri samopoštovanja pokazala se bliska korespondentnost između faktorske strukture samopoštovanja i strukture originalne forme tog instrumenta. Jedino se faktor samopoštovanja visoko podudarao u dva skupa podataka. Pet faktora ličnosti bilo je umjereno, no dosljedno, povezano sa samopoštovanjem. Veza između dimenzije emocionalne nestabilnosti i samopoštovanja bila je najjača, dok je veza između ugodnosti i samopoštovanja bila najslabija.

Ključne riječi: velepetori model, adolescenti, samopoštovanje, samoprocjene, procjene roditelja

Persönlichkeit und Selbstachtung bei Adoleszenten: Eine Analyse von Selbsteinschätzungen und Einschätzungen von elterlicher Seite

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In diesem Artikel wird die Faktorenstruktur der IPIP*-Marker des Big-Five-Modells beschrieben, die bei einer Untersuchung kroatischer Adoleszenten anhand von

*International Personality Item Pool

Selbsteinschätzungen und Einschätzungen vonseiten der Eltern eingesetzt wurden. Einer großen Gruppe von Adoleszenten (N = 706) wurde in revidierter, kroatischer Fassung das IPIP-Inventar des Big-Five-Modells mit insgesamt 50 Einheiten vorgelegt, um eine Beschreibung von sich selbst zu geben; anhand desselben Instruments äußerten sich auch die Eltern der Adoleszenten (N = 592) über ihre Kinder. Ebenfalls verwendet wurde die übersetzte Rosenberg-Skala zur Ermittlung der Selbstachtung, wiederum von Adoleszenten als auch von Eltern. Die gesonderten Analysen der anhand der IPIP-Marker ermittelten Selbsteinschätzung sowie der elterlichen Einschätzung ergaben eindeutige orthogonale Big-Five-Strukturen, die mit den entsprechenden Daten kroatischer Erwachsener sowie mit amerikanischen Daten nahezu übereinstimmen. Eine Analyse des Bezugs zwischen der Selbsteinschätzung der Adoelsezenten und den Aussagen elterlicherseits anhand der IPIP-Marker des Big-Five-Modells zeigte unzweideutig das Bestehen eines Wechselverhältnisses zwischen den fünf korrespondierenden Faktoren auf. Die Selbsteinschätzung der Adoleszenten zur Selbstachtung und die entsprechenden Aussagen von elterlicher Seite zeigten nach gesonderten Analysen eine enge Korrespondenz zwischen der Faktorenstruktur der IPIP-Marker hinsichtlich Selbstachtung und der aus der Originalfassung dieses Instruments hervorgehenden Struktur. Die fünf Faktoren des Persönlichkeitsmodells erwiesen sich als mäßig, aber konsequent verbunden mit dem Faktor Selbstachtung. Am stärksten war der Bezug zwischen der Dimension emotionaler Instabilität und Selbstachtung, am schwächsten der zwischen Wohlfühlen und Selbstachtung.

Schlüsselwörter: Big-Five-Modell, Adoleszenten, Selbstachtung, Selbsteinschätzung, elterliche Einschätzung