

## **An Examination and Revision of the Love Attitude Scale in Serbia**

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### **Abstract**

The research reports on results of an initial application of the Love Attitude Scale (Hendrick & Hendrick, 1986) in Serbia. The study was conducted on the sample of 127 respondents, mainly of adolescent age, from Subotica, Serbia. We explored the factor structure of the Love Attitude Scale, analyzed relationships between its subscales, and examined relevant correlates of its dimensions. We also performed extensive item analysis of the scale, and proposed several new items for the use in the revised Love Attitude Scale for Serbia. Correlates of the revised subscales correspond to those obtained with the original scale and in other countries. The results confirm cross-cultural stability of the six-dimensional structure of the Love Attitude Scale. It was concluded that the Serbian adaptation was successful, and that the translated and slightly revised scale can be used as a valid instrument for the assessment of the six love styles.

*Keywords: Love styles; factor analysis; romantic behavior; Serbia*

For many years academic psychologists had not been interested in research on love. However, the last two decades witnessed rising interest in this aspect of human psychology with many developments and research programs. One of the outcomes is a number of operationalizations of different attitudes to love, love styles, or dimensions of love. Some examples are Rubin's (1970) Love Scale, the Love Scale developed by Munro and Adams (1978), the 'Erotometer' developed by Bardis (1978), and Sternberg's Triangular Love Scale (1986, 1987, 1997).

Among the most interesting and extensively used scales is Hendrick and Hendrick's Love Attitude Scale (1986, 1989, 1992, 1993). This scale was developed by

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Hendrick and Hendrick (1986) on the basis of Lee's typology of love styles (Lee, 1973). They concentrated on three primary and three secondary love styles. The primary love styles are Eros (romantic, passionate love), Ludus (game-playing, somewhat manipulative love), and Storge (friendship-like love), while the secondary love styles are Mania (dependent, possessive love), Pragma (rational, "shopping-list" love), and Agape (selfless love) (Hendrick & Hendrick, 1986, p. 393).

Through a series of studies, Hendrick and Hendrick developed the 42-item Love Attitude Scale, comprising 7 items measuring each of the six love styles. The results of factor analyses revealed a relatively simple factor structure, and distinctiveness of the six love styles. All subscales proved to be internally consistent (alphas generally between .70 and .80), and relatively unrelated to each other (the highest correlations are usually between Agape and Mania, the magnitude being about .30). Also, the Love Attitude Scale has been able to predict various indices of love behavior, and other measures of love attitudes (Hendrick & Hendrick, 1986, 1989).

This research reports on the results of an initial application of the Love Attitude Scale in Serbia. We explored the factor structure, analyzed relationships between subscales, and examined certain relevant correlates. We also performed extensive item analysis of the scale, and proposed several new items for use in the revised Love Attitude Scale for Serbia.

Cross cultural examination of theories of love is an important aspect of theory building, especially in distinguishing the relatively universal from more culture-bound aspects of love. Hence, it is not surprising that love styles, and LAS in particular, have recently been subject to cross-cultural comparative research (e.g., White et al., 2004, Neto et al. 2000, Neto, 1994, Kanemasa et al., 2004, Yang and Liu 2007). These studies generally support the six-dimensional model as operationalized by the LAS scale. Neto et al.'s (2000) study, for instance, analyzed student samples from Africa, Asia, South America, and Europe, and concluded that the six dimensions could be regarded as comparable across the examined countries. The reviewed literature suggests that cultural differences affect differences in average scores on various dimensions more than the structure of the scale. Hence, the general expectation for the present study is that it should be possible to replicate these findings also in Serbia.

Cultural peculiarities of Serbia, with regard to conceptualizing love relationships, would include, on the one side, the background of strongly patriarchal culture. Traces of

this tradition, however, are likely to be felt primarily among the older respondents. Among the majority of our respondents, strong influence of international popular culture is also supposed to be visible. Serbia, of course, shares both of these features with most of the countries in the region, whether the Balkans, or wider Eastern Europe. Thus, the overall results for the present sample should actually differ from the original samples reported by Hendrick and Hendrick less than most of the samples from Neto et al. (2000).

## **Method**

### **Survey and Respondents**

The Love Attitude Scale was included in a survey organized within an extracurricular course in Social Psychology, at the Open University, Subotica, Serbia. Part of the respondents were course attendants, who collected the rest of the data by administering the questionnaire to their classmates, family members or acquaintances. Obviously, the sample is non-random, but is generally comparable to the samples from other similar studies (e.g., Neto et al., 2000). In total, there were 127 respondents, 74 of them females. The mean age was 18.5, within the range from 15 to 42 years. However, most of the respondents were of adolescent age (81% were between 17 and 19 years old).

### **Measures**

The background inventory asked respondents for their age, gender, socio-economic background, and related indicators. Hendrick and Hendrick's (1986) Love Attitudes Scale consists of 42 items, seven items for each of the six subscales. The items are presented in Likert format, with 5 possible responses, where 1=strongly agree, and 5=strongly disagree.

The scale was translated by the first author, and two colleagues provided independent back-translations. The differences from the original were reconciled through joint discussion. The main goal was to remain as close to the original content as possible. The main exception is that the term 'lover' is generally translated as 'partner', or 'love partner'. Specific connotation of the term lover in the Serbian language – the term is often used to imply extramarital sexual relationship - makes it inappropriate for the present purpose.

Since the scale contains various idiomatic expressions concerning love relationships that may be culturally specific, we expected that some of the original items might prove to be psychometrically weak in the new cultural context. Hence, several additional items were created for each of the seven subscales, using expressions more specific to the local culture. The main issue here is the semantic content. In case of several items, it proved difficult to remain faithful to the original meaning and create a Serbian translation that would not sound somewhat cumbersome or artificial. For each of the newly formulated items, we had in mind the definition of a specific love style in question. In other words, the aim of the newly generated items was not to explore the existence of additional dimensions of love styles, but to secure the reliable measurement of the original six dimensions.

In addition, the questionnaire contained a number of items concerning various aspects of love behavior, or romantic experiences. Most of them are also taken from Hendrick and Hendrick (1986). For example, we asked for the number of previous romantic love partners a respondent has had, or for satisfaction with romantic life. Respondents were given the usual instructions for the Love Attitude Scale to respond to the items with their current partner in mind, or if they were without a partner, with their most recent love partner in mind.

## Results

### Factor analysis of the original Love Attitude Scale items

We first report on the results of factor analysis of the original Love Attitude Scale items. We followed the method of analysis presented in Hendrick and Hendrick (1986). The imposed six-factor solution accounted for 44.9% of variance, which is rather similar to the results reported by Hendrick and Hendrick<sup>1</sup>.

However, neither in original nor in Varimax rotated position did the factors clearly reproduce all of the 6 dimensions of the Love Attitude Scale. The *Eros* scale was reproduced rather well (Factor 2), with all seven *Eros* items having significant loadings (between .32 and .72). However, three *Mania* items with loadings above .35 also appeared on this factor. *Ludus* (Factor 5) was somewhat less well reproduced, with item loadings ranging from .23 to .64. This factor also contained a few items from other

subscales (Eros, Mania, Agape). The *Storge* (Factor 4) factor contained 5 *Storge* items with significant loadings, ranging from .51 to .71. Two *Storge* items (16 and 17) had non-significant loadings on this factor, and created a separate ‘dual’ factor (Factor 6). *Pragma* and especially *Mania* items loaded significantly, though moderately in magnitude, on this factor. Most of the *Pragma* items loaded on Factor 3, loadings ranging from .33 to .70. Again, the factor contained some items from the other dimensions. *Mania* and *Agape* (Factor 1) created one single factor, with *Agape* items having somewhat higher loadings (from .32 to .69) than *Mania* (from .32 to .58). The sixth factor was primarily defined by two *Storge* items (16 and 17) but also with some other items with lower coefficients.

We concluded that initial exploratory factor analysis of the Love Attitude Scale did not result in the expected six dimensions of love styles. The largest deviation is in the convergence of *Mania* and *Agape* dimensions, and in the appearance of the dual factor with two *Storge* items. We obtained essentially the same result when we performed Oblimin factor rotation.

It proved impossible to separate *Agape* and *Mania* even when we entered only these two subscales into factor analysis, and imposed a two-factor solution. Each of the two extracted factors again contained a mixture of *Agape* and *Mania* items. For example, the second factor contained two *Agape* (41 and 36) and three *Mania* items (32, 34, 29). When we attempted to combine the newly constructed items for these two scales with the original *Agape* and *Mania* items, it was possible to create two relatively clear factors, but not interpretable as the two targeted dimensions. One factor again was combined of diverse *Mania* and *Agape* items, while the second dealt with the presence of conflicts within the relationship (e.g., ‘we frequently argue’ and the like items)<sup>ii</sup>.

Convergence of *Mania* and *Agape* dimensions would be less problematic if it were of a more moderate degree. Hendrick and Hendrick (1986) also report significant correlation between these scales ( $r=.30$ ), though they did not have a problem to differentiate them. Our result, therefore, may be due to improper translation, cultural differences, or to the specific age effect<sup>iii</sup>.

### **Revision of the Love Attitude Scale**

Because we did not obtain the expected factor structure from the original items, we examined whether some improvement could be achieved by the introduction of the newly created experimental items. Using the same sample of respondents, we performed a

series of factor analyses and reliability analyses, with introducing new items one at a time. In this way it was possible to improve internal reliabilities of the scales, and achieve a clearer factor structure.

### ***Factor analysis with the new Love Attitude Scale items***

Six extracted factors from the intercorrelation matrix of the revised Love Attitude Scale account for the somewhat higher percentage of total variance than previously (47.5%). More important is the improvement in the obtained Varimax rotated factor structure (Table 1). All Eros items now appear on the first factor, with consistently high loadings (ranging from .49 to .74). The newly introduced Eros item 1 (“*I would say that I am lucky in love*”) seems to be consistent with other items, in spite of its relatively peculiar wording. Perhaps an image of oneself as being ‘lucky in love’ reflects one’s positive experience of love relationship, and ‘passionate’ and ‘romantic’ love style.

The second extracted factor contains loadings of all seven Storge items, ranging from .38 to .76. The two new items fit well in this factor. In fact, one of them has the highest loading (item Sx2 “*Before we started our relationship we knew each other for quite long*”). Two Pragma items also load on this factor, though with relatively lower coefficients (.35 and .36). Perhaps, there is some common variance in seeing love as transformed friendship and as a ‘rational choice’ procedure.

All seven Mania items load on the third factor, with loadings from .32 to .63. The two new items are well incorporated into the Mania factor. A more noteworthy problem is an old item (M33), which has a higher loading on the Agape factor. None of the new items was able to replace this item in a way which maintained Mania’s internal consistency and improved its factor structure. Nevertheless, improvement was achieved in the sense that it was possible to factorially separate Mania and Agape, while previously items from both scales created a single common factor. In addition, two Ludus items load negatively on the Mania factor. Again, this is not too surprising, since there is some opposition between obsessive love (Mania), and ‘love as a game’ (Ludus) rather than orthogonality. Moreover, the content of the ‘problematic’ Ludus item (L11) sounds rather as the negative side of Mania (getting easily over love affairs is quite the opposite of being not able to sleep because of love). Again, none of our new items could improve both internal consistency of Mania and its factorial distinctiveness<sup>iv</sup>.



**Table 1. Varimax rotated factor loadings of the revised Love Attitude Scale**

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
<i>Eros</i>						
<b>Ex4 I would say for myself that I am lucky in love.*</b>	.59					
E2 My partner and I have the right physical chemistry between us.	.60					
E3 Our lovemaking is very intense and satisfying.	.63					
E4 I feel that my lover and I were meant for each other.	.68					
E5 My partner and I became emotionally involved rather quickly	.55					
E6 My lover and I really understand each other.	.74					
E7 My lover fits my ideal standards of physical beauty/handsomeness.	.49					
<i>Ludus</i>						
L8 I try to keep my partner a little uncertain about my commitment to him/her						.51
<b>Lx3 Love is passing.</b>						.65
L10 I have sometimes had to keep two of my lovers from finding about each other.						.54
L11 I can get over love affairs pretty easily and quickly.						.29
<b>Lx2 No love relationship is forever.</b>						.63
L13 When my lover gets too dependent on me, I want to back off a little.					.49	.39
L14 I enjoy playing the 'game of love' with a number of different partners.						.62
<i>Storge</i>						
S15 It is hard to say exactly where friendship ends and love begins.						.43
<b>Sx2 Before we started our relationship we have known each other for quite long.</b>						.76
<b>Ax1 Real love lasts forever.</b>						.51
S18 The best kind of love grows out of a long friendship.						.73
S19 Our friendship merged gradually into love over time.						.75
S20 Love is really a deep friendship, not a mysterious, mystical emotion.						.38
S21 My most satisfying love relationships have developed from good friendships.						.67

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*Continuation.*


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<i>Pragma</i>			
P22 I consider what a person is going to become in life before I commit myself to him/her.			.60
P23 I try to plan my life carefully before choosing a partner			.73
P24 It is best to love someone with a similar background.			.62
P25 A main consideration in choosing a partner is/was how he/she would reflect on my family	.36		.41
P26 An important factor in choosing a partner is whether or not he/she will be a good parent.	.35		.33
P27 One consideration in choosing a partner is how she/he will reflect on my career.			.62
P28 Before getting very involved with anyone, I try to figure out how compatible his/her hereditary background is with mine in case we ever have children.			.61
<i>Mania</i>			
M29 When things aren't right with my lover and me, my stomach gets upset.		.55	
<b>Ax3 I cannot be in a good mood if my partner isn't.</b>		.52	
M31 Sometimes I get so excited about being in love that I can't sleep.		.58	
M32 When my partner doesn't pay attention to me, I feel sick all over		.63	
M33 When I am in love, I have trouble concentrating on anything else.		.32	.41
M34 I cannot relax if I suspect that my partner is with someone else		.59	
<b>Ex2 I am in love 'up to my ears'.</b>		.42	
<i>Agape</i>			
<b>Ax2 I do not make difference between my wishes and my partner's.</b>			.46
A37 I would rather suffer myself than let my partner suffer			.62
A38 I cannot be happy unless I place my lover's happiness before my own.			.53
A39 I am usually willing to sacrifice my own wishes to let my lover achieve his/hers.			.65
A40 Whatever I own is my lover's to use as he/she chooses.			.67    -.37
A41 When my lover gets angry with me, I still love him/her fully and unconditionally.	.39		.31
A42 I would endure all things for the sake of my lover.			.67

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*Note:* Loadings above .35 shown, except if lower loading belongs to the expected factor.

\* Newly created items are given in boldface letters.

All Agape items, including the new Ax2 item, load significantly on the Factor 4, loadings ranging from .31 to .67. As aforementioned, one Mania item (M33) has a higher loading on this factor than on its own. In addition, one Agape item (A41) loads higher on the Eros factor than on Agape, though the difference is rather small. Nevertheless, the structure of this factor seems to be rather clear.

The Pragma factor (Factor 5) contains only original items. They all load significantly and primarily on this factor, though two items (P25 and P26) load also on the Storge factor (loadings are quite modest, from .36 to .35, respectively). However, two items from other dimensions also load on the Pragma factor. One is Ludus item L13 (backing off in relation to a dependent partner), the other is Agape item A40 (readiness to share everything with partner; negative loading). It seems that dispassionate Pragma implies maintenance of relatively clear boundaries in relationship to a partner

The sixth extracted factor contains Ludus items, with loadings from .29 to .65. The two new items have the highest loadings. However, it is possible that they gave a particular twist to the Ludus factor (both refer to the temporary character of love). But, they seem well incorporated with the other items. It seems that more problematic are the original items L11 and L14, because they both load significantly and higher (in negative direction) on Mania factor.

### ***Reliability analysis***

Table 2 shows reliability coefficients for the original and for revised Love Attitude Scale. In total, eight items were changed: one item each in the Agape and Eros scales, two items each in the Ludus, Storge and Mania scales, and none in the Pragma scale. For all scales internal consistencies were improved, though changes in the case of Agape, Eros and Mania are relatively small. The largest improvement is achieved for Ludus, where the coefficient changed from .59 to .72.

**Table 2 Reliability coefficients (Alpha) of the original Love Attitude Scale, and subscales with replaced items**

	Eros	Ludus	Storge	Pragma	Mania	Agape
Alpha, original scales	.76	.59	.69	.72	.74	.75
Alpha, revised scales	.77	.72	.77		.78	.77
Number of changed items	1	2	2	0	2	1

In the case of Storge, as was mentioned previously, two items created a separate factor. Their correlations with the total scale were naturally rather low (.20 and .18), so the introduction of the new items improved internal consistency of the Storge scale substantively. In the end, all scales appeared similarly internally consistent. Coefficients range from .72 (Ludus and Pragma) to .78 (Mania), which is comparable or higher than reported in Neto et al. (2000).

### *Intercorrelations between Love Attitude Scale dimensions*

Varimax factors are, of course, orthogonal. But, it is interesting to examine intercorrelations between summarized scores of the Love Attitude Scale, both original and with new items, since this can show the relationships between love styles, if all items within the scales are treated equally. Table 3 shows these coefficients. The original scales are generally weakly or not related. Expectedly, the most deviant case is the relatively high correlation between Agape and Mania ( $r=.54$ ,  $p<.001$ )<sup>v</sup>. Hendrick and Hendrick (1986) also obtained the highest correlation between these two scales, but considerably lower than here (they obtained  $r=.30$ ). The pattern of interrelationships, however, significantly differs from the one reported by Neto (1994). Among the Portuguese students, the highest correlation was obtained between Eros and Agape (.38) and Pragma and Mania (.28), both of which are insignificant in the current sample.

Intercorrelations between the scales with new items are generally even higher. The coefficient between Agape and Mania is .60, between Agape and Ludus -.40, between Mania and Ludus -.37 (all  $p<.001$ ). Obviously, if scales are scored by simple summation, the attempt at distinguishing love styles did not succeed particularly well. In case of Agape and Mania it is more than clear (with or without new items). The two scales appear to have around 30% of variance in common.

**Table 3 Intercorrelations among Love Attitude Scale summary scores. Above the diagonal are the original scales, below the diagonal are scales with changed items**

	Eros	Ludus	Storge	Pragma	Mania	Agape
Eros	-	.03	-.02	-.12	.13	.19
Ludus	-.20	-	-.06	.21	-.27*	-.27*
Storge	-.06	-.11	-	.26*	.31**	.25*
Pragma	-.11	.16	.30**	-	.05	-.15
Mania	.26*	-.37**	.28**	.02	-	.54**
Agape	.21	-.40**	.24*	-.12	.60**	-

\*\* $p < .001$ , \* $p < .01$ . According to Bonferroni adjustment (for a set of 30 significance tests), correlation should be .28 or above to maintain table-wide significance level at .05.

### *Relationships with background variables*

Previous research has found certain gender differences in average scores on the LAS dimensions, though of modest magnitude. Presently, as shown in Table 4, significant differences were obtained only in case of Mania, where females tend to score higher ( $t=2.51$ ,  $p<.013$ ). The difference was somewhat smaller if the scale contained only the original items. Hendrick and Hendrick (1986) obtained similar result for this scale, though in their case gender differences appeared on additional subscales as well. Cross-cultural evidence (Neto et al., 2000), however, suggests surprisingly few gender differences in love styles<sup>vi</sup>.

**Table 4 Gender differences in means on the Love Attitude Scale (revised scales, summary scores)**

	Eros	Ludus	Storge	Pragma	Mania	Agape
Males	2.54	2.93	2.95	3.42	2.74*	2.67
Females	2.39	3.22	2.88	3.41	2.33*	2.82

Note: Scale values range from 1: completely agree, to 5: strongly disagree.

Differences in means ( $t$  test): \*  $p < .01$ .

If average scores on different scales are compared, we see that our respondents endorse mostly Eros, then Mania, Agape, Storge, Ludus, and finally Pragma. If the obtained averages for males and females are compared with those obtained by Hendrick

and Hendrick (1986; compare also with Neto et al., 2000) it is noticeable that the Serbian respondents endorse the six love styles to approximately the same degree as respondents from the USA. The most notable exception seems to be the rejection of Pragma love style, where the difference is approximately half a raw score point.

We also analyzed relationship of the Love Attitude Scale with age and education, but the relationships were below the adopted significance level.

### ***Love Attitude Scale and indicators of romantic behavior***

The Erotic love style is most predictive of various indicators of romantic behavior (Table 5). Those endorsing Eros report being more frequently in love, being presently in love, having a partner presently, being longer with the present partner, being more satisfied with the self, and with the present relationship. The last coefficient ('satisfied with the present love relationship') is the highest ( $r=.57, p<.001$ ). Erotic love appears to be *the* Love, for this sample of respondents at least.

Ludus is characterized with fewer and the opposite behavioral correlates. Game-playing love, not surprisingly, implies greater probability of not being in love and relatively shorter duration of the present relationship. Moreover, individuals with higher scores on Ludus appear to be less satisfied with their love relationship. It would be interesting to find out whether this approach to love has dissatisfaction as its *consequence*, or the dissatisfied adopt the game-playing love style in their search for a 'true love'.

**Table 5 Correlations between the Love Attitude Scale and selected background variables (original and revised scales)**

Variable	M	SD	Correlation coefficients <sup>a</sup>					
			Eros	Ludus	Storge	Pragma	Mania	Agape
B6 How many times in love (1: none, 5: more than 5 times)	3.29	1.27	-.23*					
B7 In love now (1: No, 2: Yes)	1.69	.49	-.36** [-.29**]	.24*			-.44** [-.34**]	-.30** [-.31**]
B8 Has a partner now (1: No, 2: Yes)	1.50	.50	-.36** [-.29**]		.24*			
B9 How long with present partner (1: < 1 month, 5: > 1 year)	2.65	1.58	-.26*	.26*				
B10 Satisfied with self (1: not at all, 5: very much)	3.41	.97	-.30** [-.25*]				[.24*]	
B12 Satisfied with love relationship (1: not at all, 5: very much)	3.24	1.40	-.57** [-.48**]	.25*				

*Note:* In brackets are given coefficients using the original Love Attitude Scale items. Pragma does not contain new items.

Only significant coefficients presented; \*\*  $p < .001$ , \*  $p < .01$ . According to Bonferroni adjustment (for a set of 36 significance tests), correlation should be .29 or above to maintain table-wide significance level at .05.

<sup>a</sup> Scales are coded so that lower score means stronger endorsement of a particular love style.

Storge is associated with higher probability of being without a partner presently. Perhaps, their dispassionate, friendly love style makes them less active in looking for potential partners. Pragma appears unrelated to indicators of love behavior. Individuals endorsing Mania are more likely to report being in love presently. Again, it is possible both that this love style predisposes such behavior, and that it is a consequence of the experience of being in love. Unlike Eros, Mania is related to *dissatisfaction* with the self (old version of the subscale). Possibly, this drives these individuals' obsessive style of love. Agape is related only to being in love presently, and again this can be interpreted in reverse: being in love makes one feel more selfless.

The same table also displays correlation coefficients of the Love Attitude Scale dimensions containing original items only (they are given in brackets). In most cases coefficients for the *revised* scales are somewhat higher. Thus, the revision of the Love Attitude Scale also somewhat improved its ability to predict various aspects of romantic behavior. The obtained coefficients are generally in accordance with intuitive expectations, and with the results reported in literature (e.g., Hendrick & Hendrick, 1986; Neto, 1994).

## Discussion

In this research we followed Hendrick and Hendrick's (1986) suggestion that "ethnic differences in love styles may be a fruitful direction for future research" (p. 401). However, we believe that it is interesting not only to examine ethnic or cultural differences in average scores on the Love Attitude Scale dimensions, but also to examine potential differences in factor structure of the love style dimensions. In this way, the performed analysis becomes significant not only as psychometric exercise, but may contribute in generating substantive hypotheses about more and less universal aspects of the attitudes to love.

Therefore, we factor analyzed and examined the internal consistency of the translated Love Attitude Scale on the sample of Serbian respondents. Moreover, since we anticipated that some items from the original scale might be culturally specific, and therefore less valid indicators of the examined dimensions, we included a number of newly created items for each of the dimensions.

Although the 6-dimensional factor structure of the Love Attitude Scale has been repeatedly confirmed in American samples (e.g., Hendrick & Hendrick, 1986, 1989; Montgomery & Sorell, 1997) and cross-culturally (Neto et al., 2000), our exploratory factor analysis of the original items partly failed to provide new cross-national replication. While Eros was virtually perfectly factorially reproduced, Ludus, Storge and Pragma contained several items from other dimensions, and had their items loading significantly also on the other factors. The most notable deviations were convergence of Mania and Agape items into one factor, and a factor comprising two Storge items. Moreover, some of the subscales, particularly Ludus, had quite low internal consistencies (judged by Cronbach alpha coefficient).

Through a series of repeated factor and reliability analyses with introducing new items one at a time, we succeeded in improving the scales' reliabilities and the factor structure. Eight items were replaced: two in Ludus, Storge and Mania, one in Agape and Eros, and none in Pragma.

However, while factor analysis with the new items revealed a reasonably clear structure, some problems with the content of Love Attitude Scale dimensions still remained. Namely, regardless of whether the original or scales with new items are used, the correlation between summary scores of Mania and Agape (.54 and .60 respectively, both  $p < .001$ ) is too high for theoretically independent dimensions. According to Hendrick and Hendrick (1986), correlation between these two dimensions is the highest of all, but not so high as in our sample. Moreover, some other authors did not even obtain a significant correlation between these two dimensions (e.g., Montgomery & Sorell, 1997; Neto, 1994). Hence, this finding seems to require some at least speculative explanation<sup>vii 7</sup>.

Since lower or nonexistent correlations are obtained in the US samples, one possibility is to interpret the correlation as evidence of cultural differences in the structure of love attitudes. Another possibility is that such factor convergence is specific for the early stages of a relationship especially at young ages (cf. Montgomery & Sorell, 1997).

There are various factors, rather specific for young ages, such as insecurity about the self and the partner, a strong desire to form and maintain a relationship (including the role of cultural scripts and peer pressure, for example), and relative lack of experience, that probably influenced the convergence of the self-denying and obsessive love. An argument against this interpretation is that age does not seem to correlate with Love Attitude Scale scores (see our results, and Hendrick & Hendrick, 1986) but still it may be useful to investigate differences in factor structure in different age groups, or stages of the relationship, not only correlation between the Love Attitude Scale and other variables. While Hendrick and Hendrick (1986, 1989) suppose that individuals may independently change their dominant love attitudes, it is reasonable to hypothesize that relationships between the dimensions are subject to change too.

A further reason for the apparent convergence of Mania and Agape might be the inadequate scale translation, or the peculiarity of the sample. However, if Mania-Agape correlation turns out to be a stable finding across different samples, such results might suggest the need for a revision of the theory, perhaps concerning the presumed

independence of love styles (e.g., there may be certain affinity between some love styles: it may be easier to ‘pass’ from Agape to Mania, than from Pragma to Mania).

In more general terms, it seems likely that a certain degree of covariance of some scales reflects the ‘nature’ of the phenomena, not only measurement deficiency. In our view, it is not justified to expect love styles to be completely orthogonal, and to be completely changeable from one partner or relationship to another (cf. Hendrick & Hendrick, 1986). It could be more justified to conceive love styles in more trait-like fashion, which are in turn based on some more general personality traits (cf. Worobey, 2001; White et al., 2004). For example, according to Zuckerman, Tushup and Firmer (1976), high sensation seekers are freer in their sexual behavior, so it would not be surprising if they would be found to be inclined toward the Ludic love style.

We also examined a number of usual correlates of the Love Attitude Scale, with findings essentially similar to those reported in literature (e.g., Leon, Parra, Cheng, & Flores, 1995, Hendrick & Hendrick, 1986, 1989). Concerning socio-demographic background, Love Attitude Scale seem to be relatively independent. In our sample, females achieved higher scores on Mania, but age and education proved unrelated to love styles.

Concerning relationship satisfaction, our results are also in accordance with the reported findings. Eros is the strongest predictor of relationship satisfaction ( $r = -.57$ ,  $p < .001$ ; see also Montgomery & Sorell, 1997, Contreras, Hendrick & Hendrick, 1996; Inman-Amos, Hendrick & Hendrick, 1994). Ludus predicted less satisfaction with the love relationship, similarly to findings by Hendrick, Hendrick, and Adler (1988), who found the same connection, but only among men, and on the sample of dating couples. In Montgomery and Sorell’s (1997) research, Ludus was not related to relationship satisfaction for the young dating adults, but was negatively related among three groups of married adults.

The relationships obtained in the present research seem to be rather well established. This applies particularly to Eros, which appears as the most useful subdimension for prediction of various aspects of romantic behavior. It correlates with all indicators of romantic behavior included in the present survey: being presently in love, number of love partners, having a partner presently, being longer with the present partner, and also with the satisfaction with the self. Important difference between Mania and Eros seem to be particularly in the self-satisfaction, since Mania correlated negatively with it, while its correlation with being in love now is in the same direction as for Eros. It is

possible that behind these two dimensions are more stable personality traits. According to White et al. (2004), for instance, some of the highest correlations between love styles and big-five personality traits concern Mania (with neuroticism) and Eros (with extraversion).

Although the revised Love Attitude Scale subscales showed an improved ability to predict various aspects of romantic behavior, we obtained fewer and lower correlations with both indicators of romantic behavior and background variables. Probably the restricted range of relevant variables, due to the self-selection bias, is partly responsible for this.

Finally, it should be noted that our respondents' average scores do not particularly differ from those obtained in other countries, primarily the USA. The most significant exception concerns the low scores on Pragma dimension. This possibly reflects cultural differences – the common stereotype of the Balkans is not of particularly pragmatic peoples in any respect. However, this may also reflect a broader European heritage of the romantic conception of love as of something that is not supposed to involve pragmatic considerations. Neto et al.s (2000, p. 632, Table 2) results show that Pragma is particularly strongly rejected also in France and French-speaking Switzerland.

We conclude this research by reiterating that we succeeded in obtaining factorially clearly defined Love Attitude Scale dimensions, but only with the help of several newly formulated items. These items, however, do not affect the construct validity of the subscales. Correlates of the revised subscales correspond rather closely to those obtained with the original scale and in other countries. It further suggests that the Serbian adaptation is rather successful, and that the translated and slightly revised Love Attitude Scale can be used as a valid instrument for the assessment of the six love styles in Serbia. Nevertheless, regardless of the improvement achieved with regard to the scales' reliability and factor structure, further improvement is obviously possible. This particularly concerns separation of Mania and Agape on the one side, and Mania and Ludus on the other.

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<sup>i</sup> Neither Scree test nor Guttman-Keiser criteria suggested six factors to be retained in the analysis. The former test suggested 3 factors, while there were 14 factors with eigenvalues above 1.0.

<sup>ii</sup> This finding could indicate also the need to incorporate dimension of conflict into the Hendrick and Hendrick's model. Davis and Todd's (1982, 1985) *Relationships Rating Form* contains a *Conflict* subscale.

<sup>iii</sup> Hendrick and Hendrick (1986) speculated that factor structure of Love Attitude Scale may vary with age, though they did not find a correlation between scores and age.

<sup>iv</sup> Actually, when the two goals were achieved, there appeared problems with factor structure of the remaining dimensions.

<sup>v</sup> In order to adjust for multiple significance tests, alpha is set to .01 and .001. According to the Bonferroni correction, the latter value maintains set-level of  $\alpha=.05$  for 50 tests.

<sup>vi</sup> It is also interesting to note that Serbian females appear more Manic in love than any of the samples reported by Neto et al. (2000). However, it is not sure if the difference is statistically different, since standard errors were not included in Neto et al.'s (2000) report.

<sup>vii</sup> It could be counter-argued that the problem actually does not exist: psychometrically it is more appropriate to use factor scores, and dimensions scaled in that manner are orthogonal.

