

The impact of forced social comparison on adolescents' self-esteem and appearance satisfaction

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The impact of forced social comparison on adolescents' self-esteem and appearance satisfaction research, conducted on a sample of 133 high school seniors, consisted of two phases. In phase one, participants were given the Rosenberg Self-Esteem Inventory, Appearance Satisfaction Scale and Appearance Relevance Scale, and in phase two, one month later, they were exposed to photographs of attractive and unattractive individuals. Two groups of boys and girls each assessed attractive or unattractive individuals of their own gender, while two control groups (of both genders) were not exposed to any photographs. Immediately after assessing the photographs, the participants were again given the Rosenberg Self-Esteem Inventory and Appearance Satisfaction Scale. We found that forced social comparison had an impact on self-esteem and a marginally significant effect on appearance satisfaction in the group of participants (of both genders) assessing the photographs of unattractive individuals, while no effects were found in either the control group or the group assessing the photographs of attractive individuals. We also examined the impact of self-esteem, appearance satisfaction and appearance relevance as moderating variables on the effect size of social comparison and showed that higher pretest self-esteem and appearance relevance and lower appearance satisfaction predict higher posttest self-esteem scores, regardless of the participants' group membership. The group of participants exposed to photographs of unattractive people, however, showed the opposite pattern – those participants who had initially lower self-esteem have increased it more as a result of the experimental exposure.

Key words: social comparison, self-esteem, appearance satisfaction, appearance relevance, adolescents, gender

Social comparison. Daily faced with situations of uncertainty, with no universal criteria for determining whether their behaviour is right or wrong, whether an action is appropriate or not, people often use social comparison, providing

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themselves with behavioral standards and information about their position in the social world. Social comparison was initially deemed less significant than comparison by objective standards (Festinger, 1954), however, research done by Foddy and Crundall (1993) was first to show that, although having been informed of their objective success on a test, participants expressed the desire to know how well their colleagues did on the same test, considering this to be a more relevant piece of information.

Direction and effects of social comparison depend on the context (Wills, 1981; Buunk, Collins, Taylor, VanYperen, & Dakof, 1990), personal traits (Wills, 1981; Kruglanski & Mayselless, 1990), epistemic motivation (Kruglanski & Mayselless, 1990), characteristics being assessed and compared (Wills, 1981; Kruglanski & Mayselless, 1990; Suls, Martin, & Wheeler, 2002; Patrick, Neighbors, & Knee, 2004), and sense of control over these characteristics (Buunk et al., 1990).

In matters of ability assessment, people choose to compare themselves with those persons who are slightly more able or more successful than them. Festinger (1954) claimed this „upward“ social comparison to have an informative function and to lead to self improvement. On the other hand, certain people tend to compare themselves with weaker individuals („downward“ social comparison), so as to protect themselves and feel happier (Wills, 1981).

Social comparison and age. Research done so far indicates that tendency towards social comparison increases with age, along with the increase in internalisation of sociocultural attitudes, and stabilizes in adolescence (Clay, Vignoles, & Dittmar, 2005). Marked biological and psychological changes, distinct peer influence, high levels of internalisation of social norms, consciousness about appearance and self-directed negative affectivity, make adolescence one of the most vulnerable periods in life (Jones, Vigfusdottir, & Lee, 2004; Bos, Muris, Mulken, & Schaalma, 2006) and the most relevant period to be investigated considering social comparison and self-esteem. Insecure adolescents, dealing with self-directed negative affectivity, most likely turn to social comparison in order to obtain more relevant information, which in the case of upward comparison further discourages them and, in turn, leads to additional dissatisfaction and lowering of self-esteem (Schwinghammer & Stapel, 2006).

Social comparison, self-esteem and appearance satisfaction. Self-esteem could be defined as the evaluative dimension of self-concept (Opačić, 1995), as one's favorable or unfavorable attitude towards the self (Rosenberg, 1965). It is dual in nature (Harter, 1999), meaning that it encompasses both global and domain-specific evaluations of the self, i.e. both self-evaluations that represent global characteristics of the individual and those that reflect the individual's sense of adequacy across particular domains such as cognitive, social or physical and athletic competence. One can have a good overall self-esteem, but low self-esteem about a specific trait, but when a trait or group of traits is especially salient, global self-esteem can be affected.

Self-esteem is one of the key indicators of psychological well-being (Barker & Bornstein, 2010; Clay et al., 2005). A manifold of previous studies show that, regardless of their gender, people with low self-esteem incline to downward social comparison and are very negatively affected by upward comparison, while people with high self-esteem seem to be only moderately affected by both extreme downward and extreme upward comparisons (Jones & Buckingham, 2005). In certain situations of upward comparison – when people believe that their traits are flexible enough to reach the ideal and when there is a close relation between the presented models and subjects (Jones & Buckingham, 2005) – people evaluate their self-image the same or even higher, i.e. the „assimilation effect“ occurs.

Certain meta-analyses of studies dealing with self-esteem show that women's self-esteem is moderately, but significantly lower than that of men, with this difference being the most pronounced in middle adolescence (Clay et al., 2005; Harter, 2003). However, fewer research have demonstrated no differences in the level of self-esteem between men and women (Henriques & Calhoun, 1999) and further shown that women use the same terms to describe themselves as men do (and are described in the same terms by their colleagues) (Blackman & Funder, 1996).

In recent decades, including physical appearance as one of the most salient components of self-esteem has been especially pronounced among adolescents (Janjetović, 1996; Geller, Zaitsoff, & Srikameswaran, 2002). Measures of global self-esteem and appearance satisfaction show strong correlations, ranging from .40s to the .80s (Guindon, 2010), with reported correlations of .65 in the USA, and .62 in West European countries (Clay et al., 2005; Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006). Although the strength of this correlation is well documented, the directionality of relation remains unclear. Some longitudinal analyses indicate that earlier levels of appearance satisfaction, as well as BMI, contribute to future levels of self-esteem, but not vice versa (Barker & Bornstein, 2010). Having this relationship in mind, we believe that effects of social comparison in the domain of physical appearance should be investigated more thoroughly.

A large body of evidence shows that faced with superior models from the media, young people diminish their appearance satisfaction and consequently global self-esteem, which might lead toward emotional distress, eating disorders and depression (Richins, 1991; Bagley, Bolitho, & Bertrand, 1997; Furnham, Badmin, & Sneade, 2002; Fingeret & Gleaves, 2004; Johnson, McCreary, & Mills, 2007). Although most of research on appearance satisfaction embraced only female population, numerous studies reveal that physical attractiveness is as important to men (O'Dea & Abraham, 2002; Hobza, Walker, Yakushko, & Peugh, 2007; Johnson et al., 2007). Given that researchers world-wide are not agreed upon the degree to which appearance is an important aspect of self-esteem in men, it was interesting to address this issue in one culture which fosters, to a certain degree, different values from those embedded in Western societies.

Primary goals of our research were to demonstrate the effects of forced social comparison on participants' self-esteem and appearance satisfaction, after the subjects had been presented with photographs of attractive and unattractive models and to determine whether this effect was stronger for the upward or downward social comparison, and explore potential gender differences. Another goal was to see whether and how the effects of forced social comparison vary depending on previously measured self-esteem, appearance satisfaction and appearance relevance. Do, for example, people with higher initial appearance satisfaction change their scores less after viewing photographs of attractive people than those whose initial appearance satisfaction was lower? Also, having in mind the findings that traits with high relevance can determine the overall self-esteem, we expected to find higher correlations between appearance satisfaction and self-esteem for participants who place greater value on appearance than those who do not. It should be highlighted that appearance relevance represents a novel aspect of our research, being that no such variable has so far been included in the research done on social comparison, self-esteem and appearance satisfaction. We also wanted to explore gender differences in self-esteem, being that this still remains an unanswered question.

Method

Design. The research used a 3 x 2 between subjects design. Factors included were social comparison condition (upward vs downward vs control) and gender (male vs female).

Participants. Participants were 204 high school students from Belgrade, out of which 71 had to be excluded in the second phase, resulting in the final number of 133 participants (57 male and 76 female). Such a large rate of attrition was due to a number of students being absent from school on the day the second phase took place. The excluded participants did not significantly differ from the final sample on any of the measured variables or in gender ratio. Ages ranged from 18 to 20 years, with a mean age of 18 (SD = 0.375). All of the students gave the informed consent to their participation in the research. Due to technical conditions, research taking place in students' schools, participants were not assigned to groups randomly, but rather entire groups of participants were randomly assigned to either four experimental or two control conditions.

Procedure. In the first phase, the participants completed the Rosenberg Self-Esteem Inventory, Appearance Satisfaction Scale and Appearance Relevance Scale. Second phase took place one month later, when four experimental groups (two of boys and two of girls) were required to assess ten photographs of either attractive or unattractive people of their own gender on two dimensions (beauty and attractiveness). The photographs were displayed on a projector screen in the classroom where the testing was taking place, with the experimenter controlling exposure time. Each photograph was displayed for 20 seconds, and all of the participants had made their assessments in the given time. The purpose of this assessment was to ensure that participants concentrated on the photographs, but this data could also provide relevant information on whether our participants actually perceived "attractive" and "unattractive" models as such. Unfortunately, due to a technical error, the data concerning participants' ratings of the stimuli was lost. Immediately afterwards, the participants were retested on the Rosenberg Self-Esteem Inventory and Appearance Satisfaction Scale. Two control groups (boys and girls) were only asked to fill in the two scales. Appearance relevance was measured

only once because it is considered a relatively stable attitude, not liable to change under experimental conditions. The participants were thanked and debriefed after the termination of the second phase.

Instruments. *Rosenberg Self-Esteem Inventory* (1965) is a 10-item self-report inventory that measures self-esteem, defined as a stable sense of personal worth or worthiness (Rosenberg, 1965). Ratings are made on a Likert five-point scale ranging from 0 (I strongly disagree) to 4 (I strongly agree). Scores range from 0 to 40, with higher scores indicating greater self-esteem. The inventory includes statements such as "I take a positive attitude toward myself" and has a high reliability (Cronbach's $\alpha = 0.838$). The instrument was translated into Serbian and then back translated to English by different persons, and the back translation was compared with the original by a native English speaker. No corrections were needed.

*Appearance Satisfaction Scale*² is an 11-item self-report inventory created by the authors in order to provide information on participants' assessment of their own appearance. None of the existing appearance satisfaction scales (e.g. Multidimensional Body-Self Relations Questionnaire, Cash, 2000; Satisfaction with Appearance Scale, Lawrence, Heinberg, Roca, Munster, Spence, & Fauerbach 1998) were chosen because of their focus on separate parts of the face or body of participants, while the intention of the authors was to assess overall, general appearance satisfaction. It includes statements such as "I look attractive". Items are rated on a Likert five-point scale ranging from 0 (I strongly disagree) to 4 (I strongly agree) and scores range from 0 to 44, higher scores indicating greater appearance satisfaction. The reliability of this scale, obtained in the pilot research done previously by the authors, is high ($\alpha = 0.868$).

*Appearance Relevance Scale*³ is a 10-item self-report inventory created by the authors to measure the level of appearance importance. It requires respondents to indicate the degree of agreement or disagreement with statements such as "Physical appearance is more important than people are willing to admit" on a Likert five-point scale ranging from 0 (I strongly disagree) to 4 (I strongly agree). Scores range from 0 to 40, with higher scores indicating greater appearance relevance. The reliability of this scale, obtained in the pilot research done previously by the authors, is high ($\alpha = 0.868$).

Stimuli. The stimuli consisted of 40 photographs of models, 20 female and 20 male, of which 10 were of attractive and 10 of unattractive individuals. The photographs were all the same size (240 x 300 pixels) and resolution (96dpi), with the same background (light blue) and pose (frontal bust). The photographs were chosen from a set of 120 photographs gathered from the Internet, based on the assessment of an independent raters sample (N = 57). Assessments were made on a 1 to 6 scale, with average grades for „attractive“ individuals ranging between 4.3 and 5.35 and for „unattractive“ individuals between 1.66 and 2.25, which proved to be a significant difference ($F(1, 38) = 40.899, p < .01$). It was ensured that no extremely attractive or famous individuals were included, because it was previously shown that participants tend not to compare with them, finding them too ideal (Gurari, Hetts, & Strube, 2006). Extremely unattractive individuals were also excluded. The individuals in the photographs were all of approximately same age (16–25), assuming this was a relevant comparison group for our participants.

Results

The results of our research will be presented in three sections, according to the principal assumptions tested. Firstly, we will present and comment on the descriptive statistics for variables used in the research. Next, we will consider the main effect

2 Appendix 1 presents the entire Appearance Satisfaction Scale.

3 Appendix 2 presents the entire Appearance Relevance Scale.

of forced social comparison on self-esteem and appearance satisfaction. Finally, we will discuss the impact of moderator variables – self-esteem, appearance satisfaction and appearance relevance – on the effect size of social comparison.

Basic descriptive statistical measures for self-esteem and appearance satisfaction (measured at both phases of the data collection), and appearance relevance (measured only in the first phase) are shown in Table 1. No significant gender differences were found for either of the variables, and reliabilities of the scales are satisfactory.

Table 1. Basic descriptive statistical measures for the variables included in the research

Measure	Mean	Standard Deviation	Standardized Skewness	Reliability
Self-Esteem Pretest	25.23	6.641	-0.043	.703
Self-Esteem Posttest	30.74	6.472	-6.233	.838
Appearance Satisfaction Pretest	28.71	8.352	-2.148	.880
Appearance Satisfaction Posttest	29.02	7.593	-2.710	.869
Appearance Relevance	22.10	6.321	-0.143	.724

Levels of self-esteem and appearance satisfaction were further examined by considering values of dependent variables by experimental factors. In Figures 1 and 2 we present both pretest and posttest self-esteem and appearance satisfaction scores, separately for male and female participants and for the two experimental and the control group. In further text these groups will be referred to as the Group exposed to photographs of Attractive people (GA), the Group exposed to photographs of Unattractive people (GU) and the Control Group (CG).

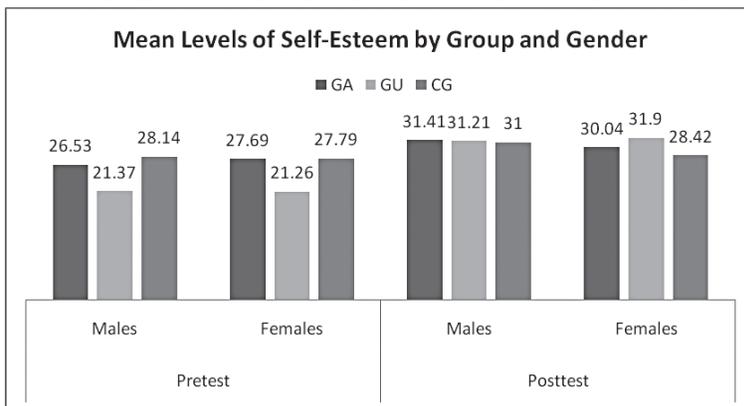


Figure 1. Pretest and Posttest Mean Values of Self-Esteem by Gender and Group (GA – Group Exposed to Photographs of Attractive People, GU – Group Exposed to Photographs of Unattractive People, CG – Control Group)

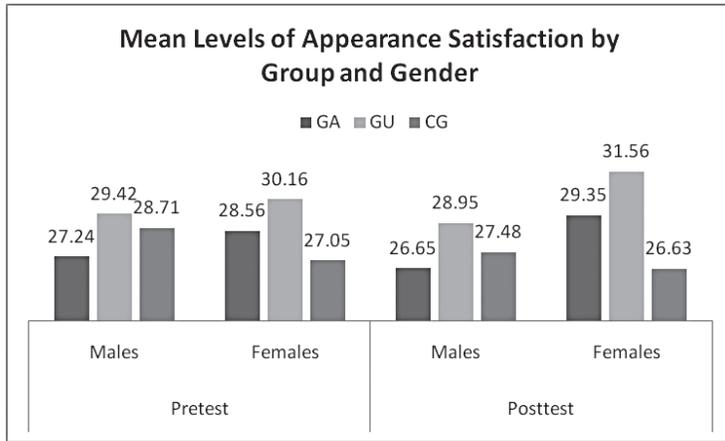


Figure 2. Pretest and Posttest Mean Values of Appearance Satisfaction by Gender and Group (GA – Group Exposed to Photographs of Attractive People, GU – Group Exposed to Photographs of Unattractive People, CG – Control Group)

As can be seen from Figure 1, initial self-esteem differed between groups, and this difference was significant: a two-way analysis of variance (ANOVA) yielded a significant effect of group membership ($F_{2, 127} = 16.252, p < .001$), with no significant gender differences and no significant interaction between group membership and gender. Although this poses a serious methodological problem for the present research, the reader should remember that participants were not assigned to groups randomly, but rather that entire groups of participants were assigned to different experimental conditions. Moreover, participants whose self-esteem was initially the lowest came from two different Belgrade high schools, while other students from the same schools were assigned to the other experimental or control group. It is therefore unlikely that this difference in self-esteem is a consequence of some systematic difference between schools. Taking the nature of the experimental manipulation into consideration, presenting participants with the lowest initial self-esteem to pictures of unattractive individuals seemed like the best solution to this problem. This way we would not risk further lowering of their self-esteem, but rather have a chance to elevate it to a level typical for the two remaining groups. Initial appearance satisfaction, unlike self-esteem, was essentially the same for all groups of participants (a two-way ANOVA showed no significant effects of either group membership, gender or an interaction between group membership and gender).

Intercorrelations between measures are presented in Table 2. The pattern of correlations is expected: with the exception of a lack of pretest self-esteem and posttest appearance satisfaction correlation, all measures of self-esteem

and appearance satisfaction are significantly and positively correlated (although to a lesser extent than in previous studies). On the other hand, appearance relevance (AR) shows no significant correlations with any of the remaining variables, which is consistent with the notion that the measured construct is essentially different. Unlike self-esteem and appearance satisfaction which have a clear self-evaluative dimension, appearance relevance could be deemed an attitude that prescribes desirable characteristics and behavior for both self and others. Nevertheless, appearance relevance exerted a moderating effect on the correlation between SE and AS. Dividing the protocols into two groups⁴ based on their appearance relevance scores (above and below the Median) shows that a substantial correlation between self-esteem and appearance satisfaction ($r = .348, p < .01$) exists in the above median group, while no correlation is observed in the below median group.

Table 2. Correlations Between Measures of Self-Esteem, Appearance Satisfaction and Appearance Relevance

Measure	Self-Esteem Posttest	Appearance Satisfaction Pretest	Appearance Satisfaction Posttest	Appearance Relevance
Self-Esteem Pretest	.291**	.252*	-.005	.150
Self-Esteem Posttest		.460**	.544**	-.148
Appearance Satisfaction Pretest			.617**	.109
Appearance Satisfaction Posttest				.009

Note. * $p < .01$, ** $p < .001$

To assess the main effect of exposure to photographs on participants' self-esteem and appearance satisfaction we have conducted two two-way analyses of covariance (ANCOVAs), the independent variables being gender and experimental group membership for both analyses. The dependent variables used in the ANCOVAs were participants' self-esteem and appearance satisfaction, as measured after the exposure to experimental manipulation, and their counterparts from the first testing phase were used as covariates. This way, we could statistically control for the differences in initial SE /AS scores and test whether the experimental manipulation had a significant effect on participants'

4 A moderated regression analysis, which should make better use of the available data, does not yield a significant moderating effect of appearance relevance. We believe, however, that the above mentioned finding is genuine and should therefore be further discussed.

self-esteem / appearance satisfaction *after* the variation caused by the covariates had been accounted for. As expected, for both ANCOVAs the covariates significantly contributed to the prediction of posttest SE and AS scores ($F_{1,126} = 23.347, p < .001$ and $F_{1,126} = 71.888, p < .001$, respectively). However, after this source of variance has been controlled for, the experimental manipulation had a significant effect on SE ($F_{2,126} = 5.478, p < .01$) and a border significant effect on AS ($F_{2,126} = 2.851, p = .062$). No significant gender effects or gender-group interactions were observed. Post-hoc comparisons revealed that the effect of experimental manipulation on self-esteem was obtained through downward comparison – participants who viewed photographs of unattractive people had significantly higher SE scores ($p < .01$) from the control group. The difference between GU and GA was marginally significant ($p = .052$, in favour of the GU), and GA and CG did not differ on their post-test self-esteem. The same pattern was observed in appearance satisfaction, where GU had marginally larger AS than the CG ($p = .077$).

In order to assess the moderating effects of self-esteem, appearance satisfaction and appearance relevance on the changes caused by our experimental manipulation, we have conducted three separate⁵ hierarchical multiple regression analyses using posttest self-esteem as dependent variable. Appearance satisfaction was not used, because the marginally significant effect of experimental manipulation does not provide enough support to such an analysis.

In the first step of the first regression we entered initial self-esteem as a predictor of posttest self-esteem. This way, the remaining predictors would only explain the residual variance, i.e. a *true change score*. In the second step we've introduced two dummy coded variables that each represented one of our experimental groups (GU and CG, taking the results of post-hoc tests into consideration). In the third step two interaction terms, obtained by multiplying grand mean centered initial self-esteem scores with the above mentioned dummy coded variables, were included in the regression. This step is crucial for examining true moderating effects of self-esteem, for interaction terms can tell us whether participants from a certain group have changed their scores more or less than the participants from other groups and in which direction this change occurred. Unstandardized coefficients from Table 3 tell us that students with higher initial self-esteem had higher posttest self-esteem, and this main effect was complemented by an interaction of self-esteem with group membership – participants from the GU who had had initially higher SE scores have increased them less than their peers with initially lower SE.

5 Separate regressions were conducted instead of one integral analysis due to the complexity of our data and the number of variables included in the prediction. This way, a relatively straightforward interpretation of the regression coefficients could be offered.

Table 3. Results of the Hierarchical Regression Analysis with Self-Esteem as Moderator

	Model	B	SE B	Beta
Step 1	Constant	23.587	2.125	
	Self-Esteem Pretest	.283	.081	.291**
Step 2	Constant	18.996	2.577	
	Self-Esteem Pretest	.425	.089	.436**
	Unattractive Group	3.582	1.351	.269*
	Control Group	-1.122	1.317	-.080
Step 3	(Constant)	18.617	3.148	
	Self-Esteem Pretest	.439	.111	.451**
	Unattractive Group	.589	1.390	.044
	Control Group	-2.318	1.355	-.165
	SE x GU interaction term	-1.000	.257	-.396**
	SE x CG interaction term	.330	.180	.193

Note: $R^2 = .085$, $p = .001$ for Step 1; $\Delta R^2 = .079$, $p < .01$ for Step 2; $\Delta R^2 = .133$, $p < .001$ for Step 3; * $p < .01$, ** $p < .001$.

The second hierarchical regression (presented in Table 4) followed essentially the same principles as the first one. Initial SE was entered in the first step, followed by group memberships (again GU and CG) in the second step, appearance satisfaction in the third and the interaction terms in the fourth. The interaction terms in this regression were different from the ones used in the previous one, but were obtained in the exact same way (grand mean centered appearance satisfaction scores were multiplied with two dummy coded variables), thus enabling us to assess the moderating effects of appearance satisfaction on changes in SE after the experimental manipulation. Apart from the previously obtained main effect of initial self-esteem on posttest self-esteem, only a main effect of appearance satisfaction on self-esteem exists, and, in accord with the positive correlation between the two, higher initial AS scores correspond to higher SE. No moderating effects of appearance satisfaction were observed, though.

The third hierarchical regression (presented in Table 5) was done in the same way as the second one – the first two blocks of predictors were identical, appearance relevance score was entered in the third block and the corresponding interaction terms (grand mean centered appearance relevance scores multiplied with group memberships) in the fourth. Main effects of “unattractive group” membership and appearance relevance are present. Lower initial AR corresponds to a higher level of posttest SE, which seems surprising, being that no significant correlation exists between the two measures, and will be explained in the discussion section. Again no moderating effects were found.

Table 4. Results of the Hierarchical Regression Analysis with Appearance Satisfaction as Moderator

	Model	B	SE B	Beta
Step 3	Constant	15.191	2.565	
	Self-Esteem Pretest	.284	.089	.292**
	Unattractive Group	2.302	1.299	.173
	Control Group	-.599	1.239	-.043
	Appearance Satisfaction Pretest	.277	.063	.358***
Step 4	Constant	17.504	3.111	
	Self-Esteem Pretest	.274	.095	.281**
	Unattractive Group	2.301	1.299	.173
	Control Group	-.348	1.249	-.025
	Appearance Satisfaction Pretest	.204	.103	.263*
	AS x GU interaction term	.039	.150	.028
	AS x CG interaction term	.213	.143	.151

Note: Steps 1 and 2 are omitted from the table because they are identical to those from Table 3; $\Delta R^2 = .109$, $p < .001$ for Step 3; $\Delta R^2 = .013$, $p > .05$ for Step 4; * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5. Results of the Hierarchical Regression Analysis with Appearance Relevance as Moderator

	Model	B	SE B	Beta
Step 3	Constant	22.646	3.003	
	Self-Esteem Pretest	.447	.088	.459***
	Unattractive Group	3.416	1.332	.257*
	Control Group	-1.156	1.296	-.082
	Appearance Relevance	-.187	.082	-.182*
Step 4	Constant	19.530	4.256	
	Self-Esteem Pretest	.432	.089	.444***
	Unattractive Group	3.386	1.339	.254*
	Control Group	-1.020	1.308	-.073
	Appearance Relevance	-.032	.170	-.031
	AR x UG interaction term	-.195	.212	-.122
AR x CG interaction term	-.209	.220	-.120	

Note: Steps 1 and 2 are omitted from the table because they are identical to those from Table 3; $\Delta R^2 = .032$, $p < .05$ for Step 3; $\Delta R^2 = .007$, $p > .05$ for Step 4; * $p < .05$, ** $p < .01$, *** $p < .001$.

DISCUSSION

Our research showed that forced social comparison had an impact on participants' self-esteem, which is in accordance with our initial assumptions and previous research. The experimental treatment effect was demonstrated only in the case of downward social comparison, and was equal for both males and females. This reinforces the findings that people tend to improve their self-esteem and feel better about themselves when models that enable them to do so

are presented (Wills, 1981; Buunk et al., 1990; Suls et al., 2002). The marginally significant effect of forced social comparison on appearance satisfaction is in line with our expectations and the implications of previous research on the topic (Bagley et al., 1997; Fingeret & Gleaves, 2004; Johnson et al., 2007; Barker & Bornstein, 2010) but needs to be replicated and further investigated.

The lack of the effect of upward social comparison could be explained by the assimilation effect. It is known that persons in whom the discrepancy between assessments of their own and an ideal appearance is not large, are more prone to keep their self-esteem at a stable level or even increase it, in different situations of social comparison (including upward comparison) (Jones & Buckingham, 2005; Bessenoff, 2006). Assimilation effect might also occur in persons who are currently on a diet, because they expect to become more like their chosen ideal, being already in the process of reaching their goal (Jones & Buckingham, 2005). They perceive their progress as controllable, which makes upward comparison inspiring to them, supporting their efforts to attain the desired look (Buunk et al., 1990). We believe this could be the case for at least some of our participants, being that the research was conducted near the end of their senior year, so it is likely that, at the time, they have been in the process of preparing for the prom night. Although this explanation may seem trivial, we assume that students, desiring to look as good as possible for their prom night, were undertaking certain activities to achieve that. It is therefore possible that the participants did not see the "attractive" images as threatening to their perceptions of self-worth.

However, the lack of the experimental effect of upward social comparison does not unambiguously imply that no upward social comparison occurred. It is also possible that our participants did in fact feel threatened by the photographs of beautiful models, but had in response activated certain mechanisms to maintain their usual levels of self-esteem. The loss of the participants' assessments data makes it impossible to test this assumption, although we believe this explanation to be less parsimonious and less plausible, because a body of research (Richins, 1991; Bagley et al., 1997; Furnham et al., 2002; Fingeret & Gleaves, 2004; Johnson et al., 2007) shows that exposure to beautiful models from the media may lead to lowering of one's self-esteem.

Although self-esteem and appearance satisfaction are significantly positively correlated in our research, the magnitude of this correlation is moderate, unlike the strong relationship found in other research – .65 in the USA, and .62 in West European countries (Clay et al., 2005; Paxton et al., 2006). This finding implies that people in Serbia rely more on other pillars to build their self-esteem, apart from their physical appearance, a claim which requires further empirical support. If this assumption is confirmed, it would be interesting to investigate other components of self-esteem and their relative contribution to global self evaluation in Serbs.

Appearance relevance was not related to either self-esteem or appearance satisfaction, which is not surprising considering the nature of these measure,

with former being a measure of attitude and the latter being measures of self-evaluation. However, appearance relevance moderated the correlation between self-esteem and appearance satisfaction, resulting in a moderate correlation between the two for the group of participants to whom appearance is important in contrast with no correlation in the group which finds appearance less relevant.

The moderator analysis showed three significant main effects of our moderating variables and one significant interaction. Namely, people with higher initial self-esteem and appearance satisfaction expectedly had higher post-test self-esteem, irrespective of their group membership, while lower pretest appearance relevance corresponded to a higher level of post-test self-esteem. The impact of appearance relevance on self-esteem might seem surprising, being that no correlations were observed between the two. However, it is the measure of change rather than of self-esteem which is affected by appearance satisfaction. This would imply that people who believe appearance is important change their self-esteem less than people to whom appearance is less important. At this stage we are not able to offer a meaningful explanation for this result, considering high reliability and face validity of the Appearance Relevance Scale.

True moderating effects are assessed by the interactions between group membership and moderating variables. Thus, while participants from the experimental group exposed to photographs of unattractive models have had higher posttest self-esteem as a group, this increase was more pronounced for those whose initial self-esteem was lower than for their more self-confident peers. In other words, people with lower self-esteem are more susceptible to the effects of downward social comparison that can improve their self-evaluation, which is in accordance with previous research (Jones & Buckingham, 2005).

The lack of gender differences in self-esteem, appearance satisfaction and appearance relevance was in contrast with our expectations based on the majority of research done on this topic (Clay et al., 2005; Harter, 2003). Our results also demonstrate that both genders are equally engaged in downward social comparison.

CONCLUSION

It appears that adolescents' self-esteem and appearance satisfaction are not so fragile as to be easily challenged by models superior in appearance to theirs. Our participants have proven to be resilient to the effects of upward social comparison. A small, short-term, unidimensional invalidation did not impact the entire system, appearance satisfaction or self-esteem as a whole. Most likely, this is a consequence of the assimilation effect – the participants did not feel threatened by the photographs of attractive models. It was, however, demonstrated in the same experiment that the same small, short-term and unidimensional experimental manipulation in the opposite direction had managed to boost participants' self-esteem significantly. If the attractive models' influence

is as strong as it is supposed to be, how come the unattractive models produced a stronger effect? Theories predict that downward comparison occurs when people find themselves in unfavourable situations, which was not the case with our participants (whose self-esteem was not low to begin with). We therefore conclude that Serbian adolescents have a strong tendency to improve their self-esteem and when the opportunity presents itself they boost it.

A similar tendency was observed considering appearance satisfaction – it can also be influenced by the exposure to photographs of unattractive models. Even though this effect is only marginally significant and would need to be replicated, it certainly opens up some questions for future studies in the field of social comparison. The most consistent interpretation of this finding, in line with previous interpretations, would be that Serbian adolescents use every available opportunity, such as viewing photographs of unattractive people, to feel better about their own appearance.

Our finding of a weak connection between adolescents' self-esteem and appearance satisfaction throws new light on previous research. Whereas in Western cultures these two forms of self evaluation are inextricably linked, Serbian adolescents seem to build their self-esteem on other aspects of the self. We can only speculate as to those other aspects of self evaluation that our adolescents used as pillars for their self-esteem, but it is possible that roles imposed on them place greater importance on social skills, practical intelligence or even material possessions.

Another interesting and novel finding of our research is the moderating role of appearance relevance on the relationship between self-esteem and appearance satisfaction. Namely, for those adolescents who deem appearance as irrelevant or marginally relevant, these two constructs are completely unrelated, while in adolescents who consider appearance to be a relevant aspect of perception of self and others, self-esteem is substantially intertwined with appearance satisfaction, that is to say, for these individuals, appearance satisfaction makes up an important constituent of self-esteem.

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APPENDIX 1

Appearance Satisfaction Scale

1. Most people would say that I'm good-looking.
2. I notice that I often attract attention of the members of the opposite sex.
3. I'm comfortable with my body figure.
4. I look good in anything I wear.
5. I like being photographed.
6. If I were to be born again, I would like to look exactly as I look now.
7. Many people envy my appearance.
8. I look attractive.
9. Women/men sometimes check me out on the streets.
10. I feel physically fit.
11. Sometimes I think about undergoing aesthetic surgery.*

Items marked with an asterisk need to be recoded before calculating the final score.

APPENDIX 2

Appearance Relevance Scale

1. Physical appearance is much more important than people are willing to admit.
2. I think it's important for a person to look nice.
3. Appearance is crucial for self-esteem.
4. Whenever I have the chance, I check out how I look in a mirror.
5. I always take notice of the way other people are dressed.
6. Whenever someone has a negative comment about my appearance, I get depressed.
7. I often rush out of the house without even checking what I look like.*
8. I don't care what other people think about my looks.*
9. If only I could look exactly as I wanted too, I'd be a lot happier in my life.
10. I think appearance isn't crucial for one's success.*

Items marked with an asterisk need to be recoded before calculating the final score.