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"Are the Good Beautiful or the Beautiful Good ?" The Relationship Between Children's Perceptions of Ability and Perceptions of Physical Attractiveness*

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While the bulk of experimental research has supported the position that physical attractiveness is important in impression formation, recent research by Gross and Crofton (1977) supported the opposite possibility, namely, that perceptions of physical attractiveness are affected by perceptions of personality. Research reported here using children's ratings obtained in a (middle) school setting examines the possibility of reciprocal feedback between perceptions of physical attractiveness and ability. The data strongly support the conclusion that perceptions of ability affect those of physical attractiveness but not vice versa. The role of the relative ambiguity of stimuli associated with physical attractiveness compared to ability is advanced as a possible explanation to the findings.

There are now a large number of experimental studies that suggest that physical appearance is an important variable in impression formation. With some notable exceptions there is evidence that the physically attractive are more likely to be viewed positively on a wide range of personal characteristics (e.g., Dion *et al.*, 1972; Miller, 1970). For example, at least four studies show that physical attractiveness affects judgments of ability. Clifford and Walster (1973) found that teachers attributed more intelligence to fifth-grade children of both sexes when the children were good-looking. Landy and Sigall (1974) and Sarty (1975) found that attractive young women were perceived as more intelligent than unattractive women. And Byrne *et al.* (1968) found a positive relationship between attractiveness and perceived intelligence for females, but a negative relationship for males.

More recently, Gross and Crofton (1977) examined the opposite possibility, i.e., perceptions of physical attractivness are affected by perceptions of a person's

personality. They found that subjects perceived female students as more attractive if they had received a favorable description of their personality. Owens and Ford (1978) replicated these results for females but not for males. These authors also cite an unpublished study (Miller) in which males with greater vocational achievement were perceived as more attractive. For females, on the other hand, the relationship was curvilinear: moderate achievers were perceived as more attractive than high or low achievers.

As in most experimental research, the research cited above involves a subject's first impressions of strangers on the basis of a very limited amount of information. It is quite possible that appearance plays less of a role in natural settings where persons tend to know more about each other. This might be expected given the evidence that perceptual biases are more likely to occur when stimuli are ambiguous (see Gerard and Conolley, 1972).

The research reported in this paper examines the possibility of reciprocal feedback between perception of physical attractiveness and ability by applying structural equation techniques to ratings provided by children in a classroom setting. The use of structual equation techniques allows one to evaluate the relative effects of perceptions of physical attrac-

tiveness on perceptions of ability compared to those of perceptions of ability on physical attractivness. The effects for two kinds of ability are examined—academic and athletic.

METHOD

Sample and Measurement

The sample includes 207 girls and 209 boys from sixth- through eighth-grade classrooms in a middle school in a small midwestern city; 25 of the 416 students were black. Graduate students distributed questionnaires to every student during one afternoon class (fourth period). School authorities claimed that these children were from families with diverse socioeconomic backgrounds. Evidence for this claim is provided by noting that the school draws most of its students from two census tracts with median incomes in 1970 of $6,803 and $11,638 respectively.

Perceptions of physical attractiveness and academic and athletic ability are based on sociometric measures derived from the following items: "Name the three *boys* in this classroom who you think are the most good-looking (excluding yourself)"; "Name the three *girls* in this classroom who you think are the most good-looking (excluding yourself)"; "Name who you think are your three smartest classmates"; "Name three of your classmates who you think are best at sports." Respondents were assigned the total number of choices they received in their fourth-period class on these items, divided by the number of children in that class.[1]

Grade-point average (GPA) was determined by the sum of the grade points achieved in four academic subjects during the semester the questionnaire was administered. The variable, athletic skill, was based on a grade received in basketball in a class in physical education. This grade was based solely on the total number of points (the range was 0 to 4) received on a variety of performance tests (e.g., dribbling, shooting). This variable was available only for the boys in the sample.

Height and weight are based on self-report. It was assumed that a child's height had meaning only in relation to the height of other children of similar age and sex. Therefore, the average height of children of the same sex and grade was subtracted from the child's actual height to obtain the height measure. Since a person's weight is evaluated relative to one's height, the latter was controlled when examining the former.

Strangers' ratings of physical attractiveness were obtained by having children from another city rate color photographs. These were standard school photographs, 1–3/4 × 1–1/4 inches and displayed the face and upper torso of each child. Twelve children (6 males and 6 females) rated only those respondents at their own grade level. Raters examined male and female pictures separately and sorted them into five piles (coded 1 to 5) ranging from the most good-looking to the least good-looking. The only instruction to the raters was that they use all categories and that they not overuse any one. Separate factor analyses were done for each grade based on the intercorrelations among the judges' ratings. The six judges (regardless of sex) who had the highest loading on the first unrotated factor were used in subsequent analyses. The six ratings were then arranged into a single overall measure of strangers' ratings of physical attractiveness.[2]

The Models

In the causal model presented in Figure 1, perceptions of academic ability are hypothesized to be a function of GPA and perceptions of physical attractiveness.

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[1] Since girls are rated separately from boys on the physical attractiveness measure, a total of six children could be named by each child, as compared to a total of three for the other measures. Kane and Lawler (1978) report high levels of reliability and validity for the peer nominating technique in their recent review of that literature.

[2] This procedure was chosen rather than using all judges' ratings since these analyses indicated that not all judges were equally good in their discrimination of physical attractiveness just as some items are less good than others in measuring an attitude or belief construct. Therefore, to maximize the internal consistency reliability of the measure, only the ratings of the best judges were used.
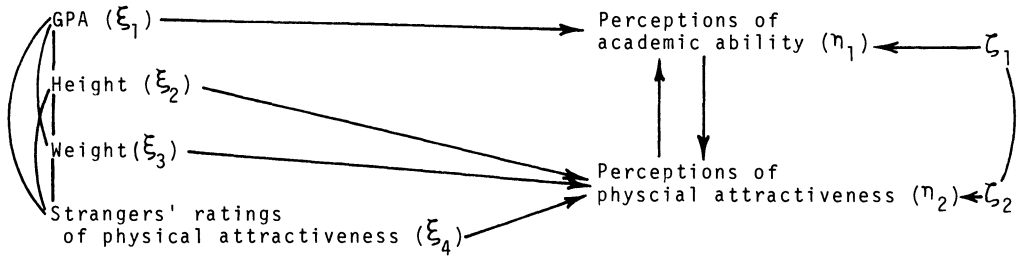
FIGURE 1

Path diagram depicting the academic ability model.

Grades in school are obviously a major source of information for children in judging the ability of their peers. The path from perceptions of physical attractiveness reflects the hypothesis of a physical attractiveness stereotype: good-looking children are perceived as having more ability.

We hypothesized that classmates' perceptions of a subject's physical attractiveness could be predicted by four variables: (1) subject's height; (2) subject's weight; (3) cultural norms regarding physical attractiveness (operationalized as strangers' ratings of photographs of subjects); and (4) classmates' perceptions of ability. There is evidence that tall males are viewed as more attractive (see Berscheid and Walster, 1974, for a review) and that adolescent boys often worry about their height (Stolz and Stolz, 1951). The effects of obesity on appearance are obvious. Strangers' ratings of physical attractiveness represent perceptions of appearance made by persons whose judgments are not affected by friendship or other extraneous factors, and serve as a "cultural rating" of the respondent's appearance although the extent to which the raters share criteria with the respondents is problematic (see Cavior and Dokecki, 1973). Finally, the hypothesized path from the variable of perceived ability to perceptions of physical attractiveness is based on the finding of Gross and Crofton (1977) that persons with positive personality traits are perceived as better-looking.

Because of the possibility of sex differences, the model in Figure 1 is estimated for boys and girls separately. Two sex differences are hypothesized. (1) Tallness should have a positive effect on per-

ceptions of physical attractiveness for boys and either no effect or a negative relationship for girls. It may be that tallness in a girl violates the norm that girls should be shorter than boys, and thus taller girls may be perceived as less attractive. (2) The path from perceived physical attractiveness to perceived ability may be stronger for girls than for boys, since there is evidence that appearance is more important for girls than for boys in our culture. Following Byrne et al. (1968), cited above, this effect may even be negative for males.

A second model is examined for boys only. That model is the same as the first model, with two exceptions: perceptions of *athletic* ability are substituted for perceptions of academic ability, and a measure of athletic skills (basketball grade) is substituted for GPA. Thus we hypothesize a reciprocal relationship between perceptions of athletic ability and physical attractiveness and a path from athletic skills to perceptions of athletic ability.

The models are estimated using LISREL, a general maximum likelihood method for estimating a system of linear structural equations (Joreskog, 1973). This technique makes it possible to estimate a nonrecursive system providing the identification problem is solved.[3]

The structural equations implied by Figure 1 are:

$$\eta_1 = \beta_2\, \eta_2 + \gamma_1\, \xi_1 + \zeta_1$$
$$\eta_2 = \beta_1\, \eta_1 + \gamma_2\, \xi_2 + \gamma_3\, \xi_3$$
$$+\gamma_4\, \xi_4 + \zeta_2$$

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[3] The model in Figure 1 clearly meets the order condition for identifiability (Theil, 1971, pp. 448–449).

Table 1. Intercorrelations, Means, and Standard Deviations Among the Variables

	1	2	3	4	5	6	7	8	$\bar{X}$	SD
1. Perceptions of academic ability	—	47	49	58	35	−02	−11	11	.10	.16
2. Perceptions of athletic ability	43	—	72	27	65	15	−01	24	.17	.21
3. Perceptions of physical attractiveness	50	48	—	30	44	04	−19	28	.44	.49
4. GPA	49	22	32	—	35	−11	−16	13	8.63	4.04
5. Athletic skills**	—	—	—	—	—	12	−05	38	2.93	.74
6. Height	10	−04	−03	18	—	—	51	06	.00	3.41
7. Weight	04	02	−16	−10	—	34	—	−18	101.91	24.32
8. Stranger's ratings	09	14	43	15	—	−16	−27	—	2.59	.97
$\bar{X}$	.12	.05	.42	10.34	—	.00	94.13	2.65		
SD	.16	.07	.49	3.49	—	2.91	19.32	1.01		

* Data for boys (N = 207) is above the diagonal; data for girls (N = 209) below. Decimal points are omitted from the correlation coefficients.
** Athletic skills were not available for females.

where the γ's are structural coefficients linking the endogenous variables to the exogenous variables and the β's are structural coefficients between the endogenous variables. It is assumed that the disturbance terms (ζ) have zero means and are uncorrelated with the independent variables. The two disturbance terms (ζ_1 and ζ_2) are allowed to correlate freely since it is unrealistic in a simultaneous equation model to assume they are uncorrelated (Goldberger, 1973).

RESULTS

The means, standard deviations, and zero-order correlations of the variables are presented in Table 1. The standardized estimates of the structural equation models for academic ability are presented in Table 2 and for athletic ability in Table 3.[4] In none of the models do perceptions of physical attractiveness significantly affect perceptions of either type of ability. On the other hand, perceptions of abilities for both boys and girls are estimated to have strong effects on perceptions of physical attractiveness. The effect of perceived academic ability on perceptions of attractiveness is strong for both the males and females, and the effect of perceived athletic ability (for males) is even stronger. It is interesting that in all the analyses, per-

ceptions of physical attractiveness are more closely related to perceptions of ability than to objective indicators of physical attractiveness. For boys, height affects perceptions of physical attractiveness in only one of the models although weight and strangers' ratings have significant effects in both models. For girls, height and weight have no direct effect on perceptions of physical attractiveness, although the cultural norms obtained by strangers' ratings do have an effect. By contrast, the objective measures of ability are strongly related to perceptions of those abilities for both boys and girls.

The LISREL model that was used to estimate the models allows one to test the overall fit of the correlation matrix implied by the model to that actually observed. The better the fit, the more plausible the model specifications seem. The goodness of fit is determined by a chi-square test with degrees of freedom equal to the number of overidentifying restrictions in the model. A good fit is one in which the significance levels are high—a condition which is obtained as the chi square value approaches the degrees of freedom.[5] As can be seen in Tables 2 and 3, for each of the three models the fit of the correlation matrix implied by the model to that ob-

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[4] The models were estimated from the covariance matrix and the unstandardized estimates generated as well. The interested reader may obtain these from the second author.

[5] More precisely, the p-value indicates the probability that the observed data could have been generated by the posited model. Therefore, the higher the p-value the more plausible the posited model. Of course, a high p-value does not guarantee that the model is correctly specified.

Table 2. Standardized Structural Coefficients for the Academic Model

Independent Variables	Dependent Variables			
	Boys (N = 207)		Girls (N = 209)	
	η_1	η_2	η_1	η_2
Perceived academic ability (η_1)	—	.46*	—	.53*
Perceived physical attractiveness (η_2)	.19	—	.01	—
GPA (ξ_1)	.52*	.00[a]	.49*	.00[a]
Height (ξ_2)	.00[a]	.13*	.00[a]	.01
Weight (ξ_3)	.00[a]	−.17*	.00[a]	−.08
Strangers' ratings of physical attractiveness (ξ_4)	.00[a]	.18*	.00[a]	.36*
Unexplained variance	.69	.58	.60	.76
Correlation between ζ_1 and ζ_2	−.15		−.06	
χ^2_2	.36		2.51	
Significance level	.84		.29	

 * Significant at the .05 level by a one-tailed test.
 [a] Constrained to equal zero *a priori*.

served is excellent. All of the significance values greatly exceed the .05 level. Note also that none of the correlations among the disturbance terms is significant, further suggesting that the specification of the models is a plausible one.

DISCUSSION

The results provide strong evidence that persons who are attributed academic or athletic ability are perceived as good-looking. This is the case even when objective measures of ability and appearance are controlled. Thus Gross and Crofton's (1977) evidence that "what is good is beautiful" receives support. The fact that

Table 3. Standardized Structural Coefficients for the Athletic Ability Model

Independent Variables	Dependent Variables	
	Boys (N = 207)	
	η_1	η_2
Perceived athletic ability (η_1)	—	.61*
Perceived physical attractiveness (η_2)	−.10	—
Basketball grade (ξ_1)	.66*	.00[a]
Height (ξ_2)	.00[a]	.02
Weight (ξ_3)	.00[a]	−.17*
Strangers' rating of physical attractiveness (ξ_4)	.00[a]	.10*
Unexplained variance	.45	.62
Correlation between ζ_1 and ζ_2	.11	
χ^2_2	1.97	
Significance level	.37	

 * Significant at or beyond .05 level by a one-tailed test.
 [a] Constrained to equal zero *a priori*.

the perceptions of ability affect perceptions of physical attractiveness more than the objective indicators of attractiveness do suggest that these perceptual biases or halo effects are indeed strong. But there was no evidence for a concurrent effect of perceptions of physical attractiveness on perceptions of ability. Thus the present research does not comment favorably upon the external validity of experimental research supporting the physical attractiveness stereotype. In that research, subjects usually evaluate strangers on the basis of a short description of the person or perhaps a report card, accompanied by a photograph. Given this limited amount of information, perhaps it should not be surprising that a photograph plays a role in the subjects' impressions of the person's personality or ability. However, in more natural settings, such as the one in which the present research was conducted, persons are likely to have much more information and therefore are less likely to rely upon appearance in their personality or ability judgments.

The direction of the perceptual bias that we have found, from ability to appearance, may reflect the fact that more objective information is available for ability than appearance. For academic and athletic ability, objective measures of performance are available (e.g., grades, standardized tests, and formal and informal sports contests). For appearance, on the other hand, there is generally no direct objective measure and there is a fair

amount of variability in judgments of who is or is not attractive. Because perceptual biases are more likely to operate when stimuli are ambiguous (Gerard and Con-olley, 1972), these biases should operate more on judgments of physical attractive-ness than on judgments of abilities. This interpretation is supported by the finding that objective indicators of appearance have a small effect on the children's per-ceptions of appearance relative to the ef-fect of objective indicators of ability on perceptions of ability.[6] Furthermore, the standard deviation of peer ratings of physical attractiveness was considerably greater than the standard deviations of peer ratings of academic and athletic ability (see Table 1).

In contrast to Owens and Ford (1978) and Miller (unpublished), we found no evidence of sex differences in the effect of judgments of ability on perceived attrac-tiveness. However, Owens and Ford examined the effect of personality de-scriptions, not ability or achievement, and Miller used an adult sample. Further re-search is needed to determine how sex and age affect these perceptual biases.

Height had a small effect on perceptions of physical attractiveness for boys. Thus at least in one of the models there is weak support for the idea that tallness is valued by boys of this age. In contrast to the notion that tallness is a liability for females, tallness did not have a detrimen-tal effect on perceptions of appearance for girls.[7]

While weight had a small direct, nega-tive effect on the physical attractiveness perceptions for the boys, it did not have a direct effect for females. However, the effect of weight is partially mediated by the strangers' ratings since weight is ap-parent, at least to some extent, in the photographs. The fact that the correlation between weight and strangers' ratings was greater for females than males may ac-

count for the fact that no direct effect for weight is observed for females.

The relatively small and in some cases insignificant effects between the relatively objective measures of physical attractive-ness and children's perceptions of others' physical attractiveness suggests that local standards or definitions of physical attrac-tiveness develop and that these standards are relatively independent of what are usually taken as more general cultural standards of beauty. Furthermore, the re-sults suggest that it is children's perceived performances (academic, athletic, social, etc.) that determine who is defined as physically attractive and who is not, i.e., performances appear to generate local standards of beauty within the classrooms.

Finally it should be pointed out that the estimates obtained from nonexperimental data using nonrecursive techniques de-pend on the correct specification of the underlying causal model. Alternative specifications were also considered. In particular, it was believed that percep-tions of popularity may also play an im-portant role in the model. However, it seems clear that perceived popularity must be thought of as reciprocally related to perceptions of physical attractiveness and perhaps to perceptions of ability as well, although the latter relationship seems less plausible. But to estimate a model with perceived popularity in it presumes the researcher has an instru-ment that is causally related to popularity but not to perceptions of physical attrac-tiveness and/or perceptions of ability. Unfortunately, no such instrumental vari-able exists in the data set. However, in examining the popularity variable[8] it was discovered that peer perceptions of popularity and physical attractiveness were correlated .86 in the boys' data and .90 in the girls'.[9] These extremely high correla-tions suggest that the children are not dis-

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[6] The relationship between strangers and peer ratings was particularly small for males. Curran and Lippold (forthcoming) obtained similar results with college students.

[7] Other evidence that we have not presented suggests that it has no relationship with a girl's popularity with males. Thus, being tall does not ap-pear to restrict the social life of girls at these ages.

[8] Popularity was measured by the number of choices received as a result of asking the children to name the three boys and girls they liked most in their classroom, divided by the number in the class.

[9] This correlation appears not to be a function of some quirk such as the two items being adjacent, since they were in fact separated from each other in the questionnaire.

tinguishing between physical attractiveness and more general personal attractiveness; the items appear to have near identical meaning for them. Indeed if the measure of popularity is substituted for physical attractiveness, the results reported in Tables 2 and 3 are highly similar. All variables that are now significant remain significant. For boys the relationship between cultural norms about physical attractiveness and popularity is not significant in either the analysis of perceptions of academic ability or athletic ability. But this is not surprising, given that the relationship between this variable and physical attractiveness was small to begin with, and that perceptions of physical attractiveness compared to a more general measure of attractiveness should logically be more highly related to the strangers' ratings. These results even further buttress the argument above that classroom performances, in this case popularity, help to define local standards of beauty.

The high correlation between these two perceptions also suggested that the two items used to measure the perceptions were in fact tapping the same latent construct which might be labelled "general attractiveness." LISREL allows one to use multiple indicators. Therefore the analyses were rerun with this respecification. Not surprisingly, the results are very similar to those reported in Tables 2 and 3. With only minor differences the results are identical to those reported above. Clearly, all the analyses suggest that it is the good who are seen as attractive, and not the other way around.

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