

Change, Reliability, and Stability in Self-perceptions in Early Adolescence: A Four-year Follow-up Study

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Changes in self-perceptions of fitness, appearance, and self-esteem among adolescents were assessed in a 4-year follow-up study. Both the changes in the mean levels across time (profile analysis), and the changes in the reliability and stability of individual differences (i.e. covariance stability as test-retest correlations) were examined. The subjects (64 boys, 49 girls) were 11 years old at the first annual measurement. Self-esteem was assessed using the Rosenberg Self-Esteem Scale, as well as self-assessment questionnaires specifically designed for this study to assess Perceived Fitness and Perceived Appearance. MANOVA- and Simplex-models were used in the analysis. Our results among the girls were in accordance with the gradual consolidation hypothesis, so that self-perceptions become more fixed with increasing age. The boys showed highly stable self-perceptions throughout the follow-up, which may indicate the early emergence of a fixed self-concept. Self-esteem increased with age but changes in perceived fitness were small over time. The decrease in perceived appearance found among the girls but not among the boys was in accordance with the gender intensification hypothesis.

Early adolescence is a particularly interesting time to study changes in self-perceptions. First, adolescents must adjust to a changing and maturing

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body (Petersen, 1987). Secondly, it is a time when new cognitive structures emerge. Information about the self is now processed in a more abstract and differentiated manner (Harter, 1990). Thirdly, early adolescence has been suggested to be a time of gender-role intensification, a time during which males and females adopt more extreme differences in their activities and self-perceptions (Eccles et al., 1989).

The purpose of this paper is to study both the changes in the mean levels across time (profile analysis) and the changes in the reliability and stability of individual differences (i.e. covariance stability as test-retest correlations). These two viewpoints have seldom been studied simultaneously. The variables studied here are self-esteem, perceived physical appearance, and perceived fitness. There is considerable consensus that perceived physical appearance has the highest correlation to global self-esteem of all the variables of self-perception not only among teenagers, but also across the life span (Harter, 1990), indicating its importance in the self-system.

In studies of developmental change, a major concern is that of age-related changes in the level of an attribute, which are evaluated by examining change in group means over time. Most developmental studies of self-perceptions deal with changes in group mean levels. O'Malley and Bachman (1983) reviewed several longitudinal studies that had assessed self-esteem using Rosenberg-type scales. The data, including their own study, have shown that self-esteem increases with age from 13 to 23. Later studies (Butcher, 1989; Cairns, McWhirter, Duffy, & Barry, 1990; Hirsch & Rapkin, 1987; Simmons & Blyth, 1987; Tashakkori, Thompson, Wade, & Valente, 1990; Wade, Thompson, Tashakkori, & Valente, 1989) also indicated an increase in self-esteem with age. Some researchers have, however, found a decrease in self-esteem after school-transition or because of seasonal change (Eccles et al., 1989; Simmons & Blyth, 1987).

Studies dealing with aspects of self-perceptions other than self-esteem are scarce and contradictory. Eccles et al. (1989) found that perceived physical competence decreased between the ages of 11 to 12. Alternatively, Nottelman (1987) reported an increase between these same ages. Marsh (1989) suggests, on the basis of his large cross-sectional study and review of the literature, a U-shaped effect during adolescence. There is evidence of decreases in different facets of self-concept during pre-adolescence. These results imply a curvilinear age effect in which the decline reverses itself during early or middle adolescence. During late adolescence and early adulthood self-concept continues to increase. This overall trend occurs for both sexes and is consistent across different dimensions of self-concept (Marsh, 1989).

An interesting question concerns the sex differences in the means of self-perceptions. Wylie (1979) suggested that there was no evidence of sex differences in overall self-concept at any age level. Marsh (1989) has since

concluded that there are small sex effects favouring boys for total self-concept measures and for self-esteem measures. There also appear to be sex differences in specific facets of self-concept—some favouring boys, and some favouring girls—that are consistent with sex stereotypes.

As children enter adolescence do these differences between the sexes increase? Evidence for this gender intensification hypothesis is confusing. Simmons and Blyth (1987) found some evidence of such a process in a few variables, particularly body-image variables and evaluations of peer popularity. Alternatively Marsh (1989) found that sex differences did not vary with age.

An additional question concerns the longitudinal stability of inter-individual differences. Stability indices indicate changes in a person's position relative to his or her reference group. It should be noted that considerable stability is possible in the relative ranking of individuals even in the presence of substantial changes in means. Stability is usually indexed by test-retest correlation. Alternatively stability can be defined as the correlation between latent (true) variables corrected for measurement error at different time-points.

Until now, the only study in which reliability and true score stability have been studied simultaneously at multiple time-points is that of O'Malley and Bachman (1983). They assessed self-esteem on three occasions during later adolescence at the ages of 15, 16, and 18. The reliabilities proved to be high (0.75–0.80) and the stabilities considerable (0.61–0.82). Males and females were combined in the analyses of this study.

Alsaker and Olweus (1992) have reviewed the studies of the stability of self-esteem in adolescence, using the Rosenberg Self-Esteem Scale and instruments that are adaptations of the RSE. The studies they reviewed, as well as their own cohort longitudinal study, indicate that global self-esteem remains a fairly stable dimension for short intervals (up to 1 year) and thereafter the stability of self-esteem declines rapidly (a 2.5 year follow-up study). They found no differences in stabilities between males and females for time intervals up to 1 year. Their results, however, indicated a somewhat stronger decrease in the stability coefficients for females than for males over an increasing time interval of up to 2.5 years. At the same time, they also found a gradual increase in stability coefficients with age. There was some indication that this increase may be greater for males than for females.

High stabilities in the self-esteem of adolescents may indicate the early emergence of a substantially fixed evaluation of a person's own worth. On the other hand, Alsaker and Olweus concluded that self-esteem is likely to become more firmly fixed or crystallised with increasing age. They introduced the gradual consolidation hypothesis, which implies that later experiences have a relatively decreasing impact on self-esteem under ordinary conditions. However, they included only a limited set of time

intervals in their study and suggest that extrapolations beyond this range should be made with caution. There is a need for longitudinal studies of long duration, with several measurements and examinations of gender differences. In accordance with the hypothesis of Alsaker and Olweus, the stability coefficients were expected to increase with age in the present study where children were being studied for a longer period.

Follow-up studies dealing with the stability of aspects of self-perceptions other than self-esteem are rare. In one of the few studies, Eccles et al. (1989) found correlations in perceived physical skills to be from 0.63 to 0.79 from the age of 11 to 12 years. Boys had more stable perceptions of physical skills than girls. Otherwise there was no consistent evidence of sex differences in individual stabilities in self-concept in the domains of mathematics, mother tongue, and social abilities. On the other hand, Nottelman (1987) found no differences between the sexes in perceived physical competence in a follow-up study of 11- to 12-year-old children. Correlation between these measurements was 0.74.

In this study, we investigated developmental changes in the level and stability of the following aspects of the self-perceptions of early adolescents: perceived fitness, perceived appearance, and self-esteem. We investigated three types of changes: changes in mean levels across time, changes in inter-subject stabilities, and changes in test reliabilities.

METHOD

Subjects and Procedure

The participants of this 4-year follow-up study were 64 Finnish boys and 49 girls. The subjects were 11 years of age at the first annual measurement. Some of the children were approached through their school and others through sports clubs: 33% of the girls and 64% of the boys were active members of sports clubs throughout the whole follow-up period. The sports participation of our girls was similar to that found in a nationally representative cross-sectional sample of 11-, 13-, and 15-year-old Finnish girls in which 34%, 31%, and 28% of the girls, respectively, were active members (King & Coles, 1992; Saarinen, 1992). Our boys were more often members of sport clubs than boys in the representative sample, in which 48%, 46%, and 32% of 11-, 13-, and 15-year-old boys, respectively, were active members of sports clubs. The socioeconomic (SES) status of the parents of these adolescents was slightly above average (Silvennoinen, Lintunen, Rahkila, & Österback, 1984).

During Fall 1 (1983) 142 adolescents participated in the study: 113 of them filled in all of the questionnaires during the successive four follow-up years. A subject attrition rate of 20% ($n = 29$) was due to refusal to participate ($n = 10$), refusal to participate in one or more measurements and thus creating

lacunae in the data ($n = 9$), moving away from the district ($n = 9$), and death ($n = 1$). To check for the selective retention of our subjects, those who dropped out of the study after the first year were compared to those of the final sample with complete data for 4 years, using one-way analysis of variance. There were no significant differences between subjects who did and did not continue in the study in the Fall 1 measures of self-perceptions, SES status of parents, or physical fitness.

The purpose of the study was explained to the subjects and their parents and a written consent was obtained. These adolescents were studied once a year. Questionnaires were administered individually after school hours as part of a battery of interviews, fitness tests, and growth measurements. Each fall, at the same point in the semester, the subjects completed the questionnaires at the research centre.

Instrumentation

Global self-esteem was assessed by using a modification of the Rosenberg (1965) Self-Esteem Scale with 8 of the original 10 items (minimum value of the sum index was 8 and maximum 32). Only 4 measurements have been included here, as the items measured during Fall 1 were dichotomous. It was easier for 11-year-old children to answer dichotomous items. Later, during the follow-up from the age of 12 years, we used 4-point items. Consequently, after the initial measurement, the 4-point Likert-scale was used. Rosenberg's scale has been found to have high reliability and to yield relationships supporting its construct validity (Hoge & McCarthy, 1984; Rosenberg, 1985).

Perceived Fitness (or Perceived Physical Performance Capacity) and Perceived Appearance were measured using a self-assessment questionnaire specifically designed for this study (see Lintunen, 1987; Lintunen, 1990 for details, including the psychometric properties of these instruments). As these scales have been used in previous studies (Holopainen, 1990; Lintunen, Rahkila, Silvennoinen, & Österback, 1986, 1988) their psychometric properties are known. Each individual was asked to compare him/herself to others of the same sex and age. The children estimated their characteristics on a 5-point Osgood scale (1–5) as follows:

I am slow () (×) () () () I am fast.

The direction of positive and negative items varied.

Perceived Fitness (Lintunen, 1987) refers to how an individual rates his or her fitness compared with that of peers of the same age and sex. The subjects estimated their physical abilities, agility, flexibility, endurance, speed, strength, and courage. A sum variable was formed from these 7 items (the minimum value of the sum index was 7 and maximum 35).

Perceived Appearance (Lintunen, 1987) is a sum index of three items: weight (I am too skinny–I am too fat); height (I am too tall–I am too short) and appearance (I am not satisfied with my appearance–I am satisfied with my appearance). Items “weight” and “height” were graded 1-2-5-2-1 and item “appearance” was graded 1-2-3-4-5 when the sum index of the appearance scale was formed. The minimum value of the sum index was 3 and maximum 15.

The internal consistency of the variables was assessed via Cronbach’s alphas, which were similar for both sexes. They were lower for Perceived Fitness (girls: 0.78, 0.57, 0.72, 0.75, 0.73; boys: 0.62, 0.76, 0.76, 0.77, 0.77, respectively) than for Self-Esteem (girls: 0.75, 0.83, 0.84, 0.80; boys: 0.85, 0.79, 0.81, 0.81). The low number of items on the Perceived Appearance Scale led to low alpha values (girls: 0.16, 0.63, 0.46, 0.22, 0.12; boys: 0.42, 0.51, 0.29, 0.24, 0.33). The estimated means, standard deviations, and correlations of the three variables are given in Table 1.

Statistical Methods

Each dependent variable was analysed separately using MANOVA-models (SPSS® Inc. 1983) followed by Simplex-models within the framework of LISREL-models (Jöreskog & Sörbom, 1979, 1989).

MANOVA-models were used in the profile analysis for both sexes. Sex by age interaction was analysed by testing the parallelism of the mean profiles. If the profiles were parallel, the hypothesis postulating similar levels between the groups was then tested. Age effects were also studied, especially the mean differences between successive time-points.

Simplex-models were used in evaluating the reliabilities of the measurements and the stabilities of the latent properties of the self-perceptions. Simplex-models allow an estimate of true score stability to be separated out from those components better regarded as errors of measurement. Coefficients of internal consistency (Cronbach’s alpha) have sometimes been recommended to correct raw correlations (see Alsaker & Olweus, 1992). The estimation of stability is, however, statistically more efficient using Simplex-models. They enable the study of changes in stability both over time-points and between different groups.

The measurement reliability coefficient for time-point t is defined as follows:

$$\text{Reliability} = 1 - \frac{\text{var}(E_t)}{\text{var}(Y_t)} = \frac{\text{var}(L_t)}{\text{var}(L_t) + \text{var}(E_t)}$$

where $\text{var}(Y_t)$ is the variance of the observed (self-perception) variable, $\text{var}(L_t)$ is the variance of the latent (true) variable, and $\text{var}(E_t)$ is the

TABLE 1
Estimated Means (\bar{X}), Standard Deviations (SD), and Correlations for Boys ($n = 64$) and Girls ($n = 49$)

Boys					Girls					Correlations									
\bar{X}	SD	\bar{X}	SD		PF11	PF12	PF13	PF14	PF15	PA11	PA12	PA13	PA14	PA15	SE12	SE13	SE14	SE15	
Boys above the main diagonal																			
PF11	24.88	3.29	24.29	3.59	—	0.70**	0.57**	0.54**	0.47**	0.40**	0.36**	0.30*	0.29*	0.24	0.26*	0.28*	0.44**	0.41**	
PF12	25.77	3.83	25.12	3.04	0.67**	—	0.64**	0.66**	0.64**	0.47**	0.47**	0.30*	0.33**	0.39**	0.40**	0.28*	0.48**	0.40**	
PF13	25.63	3.49	25.02	3.22	0.52**	0.71**	—	0.83**	0.71**	0.27*	0.30*	0.35**	0.17	0.29*	0.27*	0.29*	0.46**	0.36**	
PF14	25.47	3.44	24.47	3.52	0.47**	0.62**	0.80**	—	0.79**	0.31*	0.37**	0.43**	0.28*	0.34**	0.29*	0.17	0.47**	0.30*	
PF15	26.00	3.62	25.08	3.37	0.44**	0.52**	0.65**	0.82**	—	0.34**	0.39**	0.39**	0.33**	0.41**	0.26*	0.13	0.41**	0.29*	
PA11	11.83	2.91	11.82	2.27	0.07	0.20	0.13	0.08	-0.11	—	0.67**	0.66**	0.50**	0.44**	0.45**	0.29*	0.35*	0.28*	
PA12	11.95	3.04	11.59	3.14	-0.08	-0.06	-0.14	-0.07	-0.03	0.48**	—	0.67**	0.40**	0.36**	0.43**	0.35**	0.40**	0.29*	
PA13	12.17	2.53	11.14	2.88	-0.00	-0.09	0.03	0.03	-0.11	0.34*	0.24	—	0.54**	0.47**	0.29*	0.29*	0.38**	0.27*	
PA14	12.06	2.23	10.65	2.60	0.02	-0.06	0.16	0.28*	0.11	0.22	0.25	0.61**	—	0.46**	0.21	0.18	0.38**	0.26*	
PA15	12.58	2.05	10.96	2.72	0.09	0.12	0.18	0.17	0.19	0.19	0.24	0.14	0.46**	—	0.15	0.21	0.39**	0.28*	
SE12	26.09	4.14	24.51	3.33	0.20	0.07	0.04	0.09	0.03	0.32*	0.39**	0.22	0.37**	0.36*	—	0.61**	0.54**	0.52**	
SE13	26.48	3.51	24.55	3.43	0.22	0.15	0.20	0.20	0.11	0.30*	0.42**	0.27	0.31*	0.38**	0.58**	—	0.65**	0.67**	
SE14	26.67	3.51	25.57	3.53	0.22	0.23	0.21	0.28*	0.19	0.19	0.27	0.17	0.24	0.41**	0.41**	0.64**	—	0.74**	
SE15	25.56	3.37	25.43	3.55	0.14	0.27	0.22	0.18	0.11	0.30	0.31	-0.01	0.10	0.44**	0.51**	0.53**	0.73**	—	
Girls below the main diagonal																			

Note: PF11, Perceived Fitness at age 11; PF12, at age 12 etc.; PA11, Perceived Appearance at age 11 etc.; SE12, Self-Esteem at age 12, etc.
* $P < 0.05$; ** $P < 0.01$.

variance of the measurement error at time-point t . The coefficient of stability between successive occasions $t - 1$ and t is defined as follows:

$$\text{Stability} = \rho(L_t, L_{t-1})$$

which is the correlation between successive latent variables (O'Malley & Bachman, 1983). By using Simplex-models estimates of the reliabilities of the measurements can be calculated at each time-point despite the existence of only a single observed variable at each time-point.

It should be noted that $\rho(L_t, L_{t-1})$ will always be larger than the corresponding coefficient of the correlation $\rho(Y_t, Y_{t-1})$ between the successive observed variables Y_t and Y_{t-1} in the presence of a measurement error in those variables. Therefore, the traditionally used $\rho(Y_t, Y_{t-1})$ will underestimate the true degree of dependence between the phenomena studied.

The overall fit of these models can be judged by applying the chi-square (χ^2) test and goodness-of-fit index (GFI) (Jöreskog & Sörbom, 1989). GFI measures the relative amount of variance and covariance jointly accounted for by the model. In the light of the small samples, the χ^2 -test was used as the goodness-of-fit measure. Consequently, these analyses must be interpreted as exploratory.

The statistical significance of the individual parameters was evaluated by using the ratios of the estimated parameters and their corresponding standard errors (t -values).

RESULTS

Perceived Fitness

The means and standard deviations (Table 1) indicate that, on average, these boys and girls scored above the neutral value of 21 (the mid-point) and thus perceived their fitness positively.

The MANOVA-models indicated no interaction between sex and age (the time of measurement). Similarly, perceived fitness did not differ between the sexes during the follow-up. The overall effect of age was statistically significant ($P = 0.001$) with increases in perceived fitness observed from ages 11 to 12 ($P = 0.001$) and 14 to 15 ($P = 0.008$).

The Simplex-models provided a very good fit, as can be seen from the estimated χ^2 and GFI values (girls: $\chi^2(6) = 1.69$, $P = 0.946$, GFI = 0.987; boys: $\chi^2(3) = 3.05$, $P = 0.384$, GFI = 0.980). The reliability coefficients among the boys were high (0.78, 0.84, 0.81, 0.90, 0.91, respectively, between the successive time-points). Among the girls the estimates of the measurement error variances were close to zero so that the reliability coefficients of perceived fitness were close to 1 and could thus be fixed to 1. This result

indicates that the reliability of the perceived fitness sum index among the girls was very high.

The estimated coefficients of stability among the boys were high (0.86, 0.79, 0.97, 0.87, respectively). This indicates that the ranking of the subjects along the scale of perceived fitness remained unchanged during the follow-up. The stabilities of the girls (0.67, 0.71, 0.80, 0.82) were lower than those of the boys.

Perceived Appearance

At the beginning of the study the 11-year-old boys and girls perceived their appearance moderately positively (neutral mid-point value = 9) (Table 1). The perceived appearance of the girls thereafter decreased and that of the boys increased, thus indicating an interaction between sex and age ($P = 0.056$). The girls showed a significantly lower perceived appearance than the boys at ages 13, 14, and 15 ($P = 0.046$, $P = 0.002$, and $P < 0.000$). There were, however, no differences in means between the successive time-points.

The Simplex-models showed a very good fit, as can be seen from the estimated χ^2 and GFI values (girls: $\chi^2(9) = 13.58$, $P = 0.138$, GFI = 0.905; boys: $\chi^2(5) = 3.09$, $P = 0.686$, GFI = 0.981). Perceived appearance among the boys was very stable (0.94, 0.93, 0.84, 0.98, respectively). The estimated coefficients of reliability (0.70, 0.71, 0.79, 0.51, 0.42) were moderate during the follow-up. Among the girls the stabilities were rather low (0.36, 0.44, 0.59, 0.45). Estimates of the measurement error variances were close to zero so that the reliability coefficients of perceived appearance were near to 1 and could thus be fixed to 1. This result signifies that the reliability of the perceived appearance sum index among the girls was very high.

Self-esteem

The means for self-esteem were clearly above the neutral mid-point value of 20 and thus indicated positive self-esteem (Table 1). The girls showed, however, statistically significantly lower self-esteem than the boys at ages 12, 13, and 15 ($P = 0.031$, $P = 0.004$, and $P = 0.001$, respectively). Self-esteem among the boys increased from age 14 to 15 ($P = 0.006$) and among the girls from age 13 to 14 ($P = 0.019$). No significant interaction between sex and age was present.

The Simplex-models showed a very good fit (girls: $\chi^2(4) = 5.18$, $P = 0.269$, GFI = 0.949; boys: $\chi^2(3) = 2.55$, $P = 0.466$, GFI = 0.981). Self-esteem among the boys was stable (0.77, 0.93, 0.93). Reliabilities were: 0.83, 0.76, 0.75, and 0.75. Self-esteem was reliably measured among the girls (0.78, 0.81, 0.82, 0.80). The values of the stabilities of the girls were: 0.77, 0.80, and 0.88.

DISCUSSION

The aim of this study was to investigate changes in the mean levels and stability of perceived fitness, appearance, and self-esteem during a 4-year research period from the age of 11 years. We also attempted to identify and consequently discount those “changes” in scores that reflected measurement unreliability.

Previous longitudinal research (mainly regarding self-esteem) has shown the correlations between two time-points to be fairly high, thus indicating high stability during adolescence (Alsaker & Olweus, 1992; O'Malley & Bachman, 1983). The results of the present study suggest that both stability and reliability vary depending on the specific self-perception domain in question as well as the gender group involved. In this study, the overall reliabilities were higher among the girls than among the boys, although they were acceptably high among the boys as well. Chance may possibly play a greater role in the way the boys fill in questionnaires.

We found that the overall covariance stability varied between the sexes, with the boys showing highly stable self-perceptions throughout the follow-up. Boys relatively high (or low) in self-perceptions at the beginning of the study tended to retain these self-perceptions during the follow-up. Among the girls, stability varied between the different variables with perceived appearance showing the lowest stability. The stabilities of self-esteem and perceived fitness were higher, but nevertheless slightly lower than among the boys. Our raw self-esteem correlations, however, did not differ between the sexes, a result which is similar to the findings of Alsaker and Olweus (1992). This indicates that our data is comparable with earlier studies. Simplex-models, however, enabled more versatile and statistically effective analyses.

The analysis of disattenuated stability using Simplex-models has not been previously employed for boys and girls separately, nor at the ages of our subjects. Moreover, few earlier follow-up studies have focused on several domains of self-perception simultaneously. It is important to emphasise, however, that because of the small size of the sample characteristic of many longitudinal studies, it may conceivably be unrepresentative, and these analyses must be viewed as exploratory.

Alsaker and Olweus (1992) have concluded that self-esteem is likely to become more fixed or more consolidated with increasing age. Our results were in accordance with this gradual consolidation hypothesis. The stabilities of self-esteem increased during the follow-up. The boys showed, however, a highly stable self-esteem already from the beginning of the study (age 12). The two other self-perception variables were also stable (among the boys) already from the age of 11, and these stabilities did not increase with age. The stabilities of all the variables among the girls increased during

the follow-up. High stabilities among the boys may indicate the early emergence of a fixed self-concept.

The finding that boys had more stable perceived fitness than girls is in accordance with the hypothesis put forward by Eccles et al. (1989) that gender role-related personality characteristics are more stable in the sex for which these are gender-role appropriate. Perceived appearance, however, was also highly stable among the boys and unstable among the girls, who place a high value on looks, weight, and body-build (Simmons & Blyth, 1987).

On average, these adolescents had positive self-esteem during the follow-up period (ages 12–15). However, the girls had lower self-esteem than the boys. This result is in agreement with most current research (Harter, 1988; Rosenbeg, 1985; Simmons & Blyth, 1987), which suggests the prevalence of self-esteem differences, although often fairly minor, between boys and girls.

Self-esteem among the boys increased from age 14 to 15 and that of the girls from age 13 to 14. This result is broadly in line with that of other investigators who have also noted a gradual rise in measures of adolescents' self-esteem (O'Malley & Bachman, 1983).

These adolescents evaluated their fitness positively during the follow-up period. There were no differences regarding the level of perceived fitness between the sexes. This result contradicts the findings of most earlier research, in which males often show more positive perceptions of physical competence (Felz & Petlichkoff, 1983; Harter, 1988; Marsh, 1989; Marsh, Barnes, Cairns, & Tidman, 1984; Ulrich, 1987), although Roberts, Kleiber, and Duda (1981) did not find differences between males and females. In our case, the absence of differences is probably due to the nature of the sample. One possibility is that the sports participation of the girls who were members of sports clubs was more consistent than average, and thus raised the mean perception of fitness for the girls as a whole. We hypothesise that sports participation is an important determinant of perceptions of fitness. This consideration merits further study.

The overall changes in perceived fitness were small during the follow-up. Perceived fitness increased both among the girls and the boys from age 11 to 12 and later from age 14 to 15. In between, however, there was a plateau from age 12 to 15. There were none of the U-shaped effects suggested by Marsh (1989) either in this or the other variables studied here. The reason is probably the age of our subjects—11–15 years—which was the turning point of the U-shaped curve in the study by Marsh.

There were significant differences in perceived appearance between the sexes. The girls' perceptions of their appearance decreased and those of the boys increased. This difference between the sexes is in agreement with earlier research (Clifford, 1971; Harter, 1988; Marsh, 1989; Martin & Walter,

1982; Petersen, 1981; Petersen, Schulenberg, Abramowitz, Offer, & Jarcho, 1984; Rauste-von Wright, 1989). The decrease in perceived appearance among the girls, but not among the boys, was in accordance with the gender intensification hypothesis and the results of Simmons and Blyth (1987). In the other variables studied here, there were no signs of any such increase in the differences between the sexes during early adolescence. In addition to these differences in the level of perceived appearance, substantial differences in stability between the sexes already existed at the beginning of the follow-up period.

To conclude, the findings of our study suggest that stability and change vary considerably depending on both the specific domain of self-perception and gender. The self-perceptions of the girls were more unstable than those of the boys. In addition, the mean levels of both self-esteem and perceived appearance were lower among the girls. These results may indicate greater psychological disturbance among the girls carried by societal constraints and pressures. The extremely stable and positive self-perceptions of the boys may indicate the early emergence of a fixed self-concept. This result raises the question of the role of illusory or biased self-perceptions among boys. Further longitudinal studies with other samples are needed to verify these gender differences in stability and change.

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