

Socio-economic position and adolescents' health in Italy: the role of self-esteem and self-efficacy

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Abstract

Background: To underline the importance of self-esteem and self-efficacy as aspects of health promotion, we investigated the hypothesis that self-esteem and self-efficacy mediate the effect of socio-economic position on adolescents' health. This association has been confirmed by our data.

Methods: Data derive from the international Health Behaviours in School-aged Children (HBSC) study, 2001-02 edition: a representative sample of Italian children (age groups of 11, 13 and 15 years, N=4386) was administered a questionnaire at school. We tested with a multivariate model the effect of economic well-being on health and behavioural outcomes, first excluding, and then including, self-esteem and self-efficacy among the determinants.

Results: Perceiving poorer health, not eating enough fruits and vegetables and doing too little physical activity are conditions affected by economic well-being (O.R. of best-off to worst-off are 0.65, 0.83 and 0.46, all statistically significant), while smoking habit is not affected. Including self-esteem and self-efficacy into the model significantly lowers, or annihilates, the effect of economic conditions on these outcomes.

Conclusions: Economic well-being affects adolescents' health (perceived health and health behaviours) in Italy, but it is reasonable to hypothesize that self-esteem and self-efficacy are among the mediators of this effect. Targeted interventions aimed at enhancing self-esteem and self-efficacy could therefore help in mitigating the effect of health inequalities.

Keywords: self-esteem, self-efficacy, adolescence, socio-economic position, health

Introduction

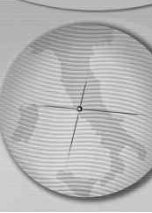
The association between socio-economic position and health represents a wide and well-defined field of study in the health research sector. On the other hand, very little is definitively known about the mechanisms that mediate this association. Previous research has been carried out in this direction, with respect to the role of social relations [1].

The situation is much less clear in early adolescence, due in part to a number of important methodological problems that make the study of this age-range quite difficult. First of all, the existence of an association between socio-economic position of the family and health status of the children, even though quite clear during childhood, becomes more uncertain during adolescence [2]. At this age, it is difficult to attribute to the child a clear socio-economic position, which is usually supposed to be that of

his/her parents [3]; and also his/her health status is difficult to measure, if classified according to "hard" indicators, such as mortality and morbidity rates, which are much too low at this age.

On the other hand, if we want to understand the mechanisms which mediate the influence of socio-economic position on health in general, the "life course perspective" [4] becomes critically important. We know that most diseases responsible for mortality and morbidity rates are chronic and degenerative diseases, with behavioral origins [5], and we also know that many habits, and social and individual attitudes, become more stable during adolescence [6], as this is the beginning of a more autonomous life with respect to the family of origin.

The importance of socialization in the study of health differences has recently been underlined by Singh-Manoux and Marmot [7], who point out how this process influences health behaviors,



psychological vulnerability, social participation and future perspectives, all of which are important health determinants.

Few studies have been undertaken in this direction. However, the indications emerging from them, seem to open interesting and promising research perspectives [8-12]. Among health-relevant characteristics of individuals, it appears that self-esteem and self-efficacy, the feeling of being able to achieve certain goals with one's own capacities [13], play a fundamental role.

WHO [14] and other organizations and authors [15] underline the importance of these two psychological characteristics for health. Several studies recommend, and have shown, the possibility of enhancing self-esteem and self-efficacy in the developmental age through educational interventions [8,16-18]. This, together with the hypothesized association between social class and psychological dimensions, indicates the possibility of using their enhancement as a way to tackle health inequalities.

The actual existence of an association between self-esteem and socio-economic position has not yet been fully proven and different measures have led to different results; however, there seems to be consistency in the relationship between these two dimensions [19]. Social differences have in fact been observed with respect to different levels of self-esteem and self-efficacy and this has been confirmed by several studies, which also note the influence of gender [20], ethnicity and race [21]. With regard to adolescence, it is suggested that at this age self-esteem is already associated with the way the individual tackles stressful events [11].

On the other hand, the idea that self-esteem can play a mediating role on the influence of socio-economic position on health has also been advanced [22].

Thus, we have a psychosocial factor which seems to be influenced by socio-economic position and which, in its turn, is identified as an important factor determining different health outcomes and behaviors. As a consequence, it can be regarded as a factor capable of mediating the influence of socio-economic position on current and future health of individuals in their developmental age.

The study we present in this article aims at verifying these hypotheses, using a set of Italian data collected in 2002, in the framework of the "Health Behaviour in School-aged Children" international study (HBSC). It explores, in this sample of early adolescents, how socio-economic position impacts on health conditions and on the adoption of particular health behaviours. Within

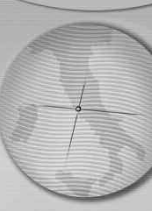
this framework, we investigate whether self-esteem and self-efficacy are actual mediators of the effect generated by socio-economic position on the behavioural and health outcomes mentioned above.

Methods

The sample - 4386 11, 13 and 15-year-old Italian children (51.6% female and 48.4% males; 34.8% 11y.o., 37.2% 13y.o., 28% 15y.o.) were systematically sampled through school classes (N=314) divided into 5 geographical strata (North-West, North-East, Centre, South, Islands). The sample unit was the school class of the first section of the sampled school, in the relevant age group. The target sample size (1536 for each age group) was calculated on the basis of a sample size allowing for a confidence interval of +/- 3%, with a probability of 95%, for the estimate of the true proportion of a binary variable. Data collection and the questionnaires follow the HBSC study's international protocol [23], guaranteeing high quality data. The data we present here belong to the 2002 HBSC data collection wave. Questionnaires were filled in anonymously at school by the pupils themselves under the guidance and control of their teachers.

Measures - Among the different measures of socio-economic status made available through the survey, we decided to use FAS (Family Affluence Scale [24]) for its higher adaptability in this age band. Asking adolescents questions about the employment and educational qualifications of their parents proved to be poorly reliable and with a high number of missing values, while most adolescents are aware of what the family owns and/or can afford, which is the basis of the FAS index. In particular, FAS includes questions on the number of cars and computers owned by the family, the availability of a bedroom for every child and the number of vacations taken during the last year.

In order to measure self-esteem and self-efficacy the Harter [25] and the Schwarzer [13] scales, drawn from psychometric literature, both in the version approved for that age band, were included in the Italian questionnaire. The first ranges from a minimum score of 5 (low self-esteem) to a maximum of 20 (high self-esteem); the second from 10 to 40. The two variables were categorized according to their distribution in tertiles, as low, medium and high values. The first scale, on self-esteem, included items such as "I usually don't appeal to others" or "I feel I am accepted by others". Examples of items in the second scale are: "I can always manage to solve difficult problems if I try hard enough" and "I can handle



whatever comes my way". Possible answers are on a four-point Lickert scale.

For health behaviours, we referred fully to the HBSC methodology. We considered the frequency according to which certain healthy (eating fruits or vegetables, performing physical exercise) or unhealthy (smoking, drinking alcohol, smoking pot; these latter only for 15-year-old adolescents) behaviours were adopted. Respondents were also asked to rate their health on a scale of four categories (excellent, good, normal and poor). The level of perceived health appears to be, at least among adults, a good predictor of more objective health measures, such as future mortality and morbidity [26]. In the analysis, behavioural variables and health perception were dichotomized. Eating vegetables was dichotomized as 'at least once a day' or 'less than once a day'; performing physical exercise as 'at least one hour a day two days a week' or 'less than one hour a day two days a week'; smoking habit as 'smoking every day' or 'smoking less than once a day'; drinking alcohol as 'drinking once a week' or 'less than once a week'; cannabis use as 'having tried smoking pot' or 'not having tried'; health perception as 'excellent' or 'less than excellent'.

Statistical methods - First, health outcomes were described in dichotomized categories according to their distribution by FAS. FAS scores were subdivided in three categories (low, medium, high) according to the HBSC protocol coding scheme. The association of FAS with self-esteem and self-efficacy was verified, separately for the two genders, by an ANOVA test on the mean scores of the two variables in the three FAS categories; this analysis was carried out separately for males and females, since their scores on these dimensions are known to be different. Finally, a multivariate logistic model was fitted, where health outcome variables,

in their dichotomized form, were used (one at a time) as dependent variables, while FAS categories, age and gender were introduced as independent variables. In a second step, self-esteem and self-efficacy were also introduced in the model among the independent variables, in order to test their independent effect on health outcomes and at the same time to assess their ability to modify the effect of FAS on the same variables; if the FAS coefficient in the logistic model is modified (possibly lowered) by the introduction of these variables, we could support the hypothesis that its effect is mediated by them effect is actually mediated by them. Self-esteem and self-efficacy were used in the logistic model as categorical variables, after reclassifying them in their tertiles distribution.

Results

The response rate was quite good: 77.4% of the sampled classes filled in and sent back the questionnaires.

Table 1 illustrates the considered health outcomes stratified by FAS group.

Overall, 31.3% of respondents perceived that they had excellent health, but the distribution was different in the three FAS groups: 35.5% of this group belong to the most advantaged social condition, while only 26.6% are in the group with a low FAS score. 47.7% of total respondents reported eating fruit at least once a day; the frequency is higher among those with a high FAS score (49.4%), while the corresponding percentage for the disadvantaged group is 4 points lower. Much stronger is the effect of FAS on physical exercise: among respondents exercising at least two days a week (86.7% of the total), those with a high FAS score were 90.1%, while those with a lower FAS score were only 81.9%. All differences were statistically significant. No

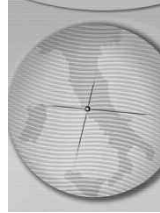
Table 1. Number and percentage of young people in favorable health condition by FAS

		Health outcomes			
		Perceived health: excellent***	Fruit/veg.: daily***	Physical act.: 2 days a week or more***	Smoking: not daily**
Valid N*		4282	4277	4278	1204
FAS	Low (N)	296	502	907	211
	%	26.57	45.23	81.93	83.07
	Medium (N)	638	974	1767	512
	%	31.49	48.10	87.26	85.19
	High (N)	405	564	1033	291
	%	35.46	49.39	90.14	83.38
Total (N)		1339	2040	3707	1014
%		31.27	47.70	86.65	84.22

* Different N are due to the different number of missing data.

** 15-year-old boys and girls only

*** Differences are statistically significant (chi square for trends) with p<0.01



significant effect of FAS was observed with respect to smoking.

In Table 2 we notice a steady increase in self-esteem and self-efficacy scores as the socio-economic position improves; scores for girls are constantly lower than for boys, but the FAS trend remains stable.

In Table 3 we observe the different risk of adopting unhealthy behaviours or perceiving less than excellent health, by age, gender and FAS level. We can see that the risk of perceiving less than excellent health increases with age (O.R.=1.28 for 13-year-olds and 1.91 for 15-year-olds with reference to the 11-year-old group). Being female increases the risk of perceiving less than excellent health (OR=1.77 compared to males) and of exercising less than twice a week (OR=1.47 compared to males); on the contrary, being female decreases the risk of eating too few fruits and vegetables (0.76 against

males). We can see that a higher FAS is protective against all risks except smoking, where we cannot observe any significant effect.

In Table 4 we show the resulting O.R.s after introducing into the model the two scales measuring self-esteem and self-efficacy. As a consequence, the significant effect of FAS on perceived health and on eating fruits and vegetables decreases: in the first case the originally statistically significant O.R. of 0.78 for the middle group loses its significance, while the 35% lower risk for the highest group drops to 24%. The effect of higher FAS in reducing the risk of not eating enough fruits and vegetables completely loses its significance.

In the new model, self-esteem accounts for a protective O.R. of 0.67 in the highest score group (with reference to the lowest) for perceiving less than excellent health, and of 0.69 for exercising

Table 2. Mean scores for the Self-esteem and Self-efficacy scale by FAS group and by gender

			Males		Females		Total	
			S.-est.	S.-eff.	S.-est.	S.-eff.	S.-est.	S.-eff.
FAS	Low	Mean	14.39	27.38	14.33	26.68	14.35	26.98
		N	453	446	609	589	1062	1035
		Std	2.44	4.89	2.58	4.75	2.52	4.82
	Medium	Mean	15.09	28.71	14.68	27.48	14.88	28.07
		N	959	938	1017	997	1976	1935
		Std	2.53	4.54	2.61	4.45	2.58	4.54
	High	Mean	15.15	29.05	15.05	28.44	15.11	28.75
		N	576	552	547	535	1123	1087
		Std	2.52	4.66	2.66	4.82	2.59	4.75
	Total	Mean	14.95	28.50	14.68	27.50	14.81	27.98
		N	1988	1936	2173	2121	4161	4057
		Std	2.53	4.70	2.63	4.67	2.58	4.71

All trends by FAS present a significant ANOVA F score ($p < 0.01$)

Table 3. O.R. for considered health outcomes by age, gender and FAS

		Risk of:			
		Perceiving less than excellent health	Eating fruit/veg. less than daily	Exercising once a week or less	Smoking daily*
Age	11y.o.	1,00	1,00	1,00	
	13y.o.	1,28	1,16	0,82	
	C.I. 95%	1,10-1,49	1,00-1,33	0,64-1,04	
	15y.o.	1,91	0,95	2,48	
	C.I. 95%	1,61-2,27	0,82-1,11	1,10-3,08	
Gender	Male	1,00	1,00	1,00	1,00
	Female	1,77	0,76	1,47	0,99
	C.I. 95%	1,55-2,02	0,68-0,86	1,22-1,76	0,73-1,36
FAS	Low	1,00	1,00	1,00	1,00
	Medium	0,78	0,88	0,62	0,85
	C.I. 95%	0,66-0,92	0,76-1,02	0,51-0,77	0,57-1,27
	High	0,65	0,83	0,46	0,98
	C.I. 95%	0,54-0,78	0,70-0,98	0,36-0,59	0,63-1,51

* 15-year-old boys and girls only

Table 4. O.R. for considered health outcomes by age, gender, FAS and tertiles scores on the Self-esteem and Self-efficacy scales

		Risk of:			
		Perceiving less than excellent health	Eating fruit/veg. less than daily	Exercising once a week or less	Smoking daily*
Age	11y.o.	1,00	1,00	1,00	
	13y.o.	1,40	1,16	0,89	
	C.I. 95%	1,19-1,65	0,10-1,35	0,69-1,15	
	15y.o.	1,96	0,75	2,62	
	C.I. 95%	1,63-2,36	0,80-1,11	2,07-3,31	
Gender	Male	1,00	1,00	1,00	1,00
	Female	1,78	0,75	1,48	1,08
	C.I. 95%	1,54-2,05	0,66-0,86	1,22-1,81	0,77-1,50
FAS	Low	1,00	1,00	1,00	1,00
	Medium	0,86	0,88	0,66	0,84
	C.I. 95%	0,72-1,03	0,75-1,03	0,53-0,83	0,55-1,28
	High	0,76	0,87	0,51	0,88
	C.I. 95%	0,63-0,93	0,73-1,04	0,36-0,68	0,55-1,39
Self-esteem	Low	1,00	1,00	1,00	1,00
	Medium	1,08	1,12	0,80	1,58
	C.I. 95%	0,91-1,29	0,96-1,31	0,64-1,01	1,06-2,34
	High	0,67	1,13	0,69	1,82
	C.I. 95%	0,56-0,79	0,96-1,32	0,54-0,89	1,22-2,73
Self-efficacy	Low	1,00	1,00	1,00	1,00
	Medium	0,70	0,74	0,82	1,16
	C.I. 95%	0,58-0,83	0,64-0,86	0,66-1,02	0,79-1,71
	High	0,39	0,66	0,70	1,22
	C.I. 95%	0,33-0,47	0,56-0,77	0,54-0,89	0,79-1,88

* 15-year-old boys and girls only

only once a week or less. Self-esteem seems to have the opposite effect on smoking, where the risk increases with increasing FAS.

Self-efficacy seems to account for the weaker effect of FAS on perceived health and on fruit and vegetable eating habits: in the first case the risk of perceiving health as less than excellent is 0.70 and 0.39, respectively in the middle and highest score groups compared to the lowest; corresponding O.R.s for eating fruits or vegetables less than once a day are 0.74 and 0.66.

We can also observe an effect of a high self-efficacy score in reducing the risk of exercising only once a week or less (O.R.=0.70), but in this case without affecting the independent effect of FAS.

No effect of self-efficacy is registered on smoking habits.

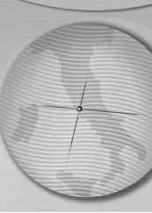
Conclusion

Socio-economic position and health outcomes - From our analysis it appears that the socio-economic position of respondents, measured through the FAS scale on family consumption, is indeed capable of affecting some important health outcomes: people living in better economic conditions perform more physical

activity, eat more fruits and vegetables, and feel in better health. However, we did not detect a similar effect on smoking habits.

Psychological aspects as mediating effect - As for the possible mediating effect played by psychological aspects on health outcomes, the results are definitely less clear; what is partially evident is the capacity of self-efficacy to mediate the effect of economic well-being on perceived health and on the consumption of fruits and vegetables; in fact, for these outcomes, we have contemporarily a highly significant effect of self-efficacy and a reduction in the significance of the effect of economic well-being. Self-esteem and self-efficacy also appear to affect the frequency of physical activity, but in this case the effect of the FAS scale fully maintains its independent effect. Contrary to expectations is the effect of self-esteem on smoking: good self-esteem seems to increase the likelihood of daily smoking.

We can therefore affirm that the effect of social class on health, as already established by several studies [27-29], is partially modified by psychological aspects, as is shown in our analysis. Nevertheless, self-esteem and self-efficacy are not capable, alone, of explaining this effect, and



systemic and social effects cannot be neglected. We would also like to put forth the following alternative (or concurrent) explanations: psychosocial dimensions, as well as health outcomes, could be affected by economic well-being, without one being a mediator of the effect of the other (our data could partially support this interpretation as well). Moreover, another area of our research [1] supports the hypothesis that socio-economic conditions can influence the quality of social relations which, in turn, can influence psychosocial characteristics of children.

Possible explanatory theories - The possible effect, supported by our data, of economic well-being on health, and the mediating function performed by psychological variables, are consistent with some important and recent theories which attempt to explain health differences. One of them [30] expresses the view that the perception of social position, with respect to that of others living in the same society, has a direct impact on self-esteem, and that this has a direct effect on stress factors [11], and thus on health and related behaviours, so the causal chain would be consistent with the mediating effect that seems to emerge in our analyses. The same direction is followed by models inspired by the concept of "relational self-esteem" of Siegrist [31,32] and Karasek & Theorell [33], even though the first gives more importance to material and wealth-related aspects (unbalance between effort and reward), while the second is more focused on the control of tasks, where self-efficacy obviously plays an important role. Both theories point out how stress, influenced by economic position and psychological factors, affects health either directly or through behaviours.

Furthermore, the bond between socio-economic advantage and health, which seems to be mediated by self-esteem, is also related to the "shame" of finding oneself in a subordinate position with respect to others, in a hierarchical sense [34]. The theories of Marmot and Wilkinson [35], according to whom self-esteem and self-efficacy take great importance, also highlight this aspect. These theories refer especially to the working environment, while their applicability in the development age is less clear. From our data it appears that, already in early adolescence, the perception of one's relative social position starts to become important in shaping the effect of socio-economic status on health.

Suggestions for policies and interventions - Regarding possible suggestions for policies and interventions aimed at reducing health differences, we realize that intervening through

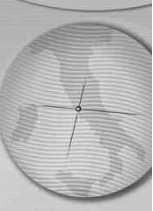
pedagogical means on children's and adolescents' self-esteem and self-efficacy, particularly in schools, can be an important tool, especially at younger ages [16,17,18,36] however we should not forget the direct effect played by social structure, which cannot be neglected. Therefore we must acknowledge that pedagogical interventions, if carried out in isolation, have little chance of producing a lasting impact: they must be accompanied by community actions and advocacy toward greater social equity. Families and schools as a whole should also be considered an important target, in that these are the places where children spend most of their time.

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