The Structure of Children's Perceived Self-Efficacy: A Cross-National Study

Concetta Pastorelli[1], Gian Vittorio Caprara[1], Claudio Barbaranelli[1], Jarek Rola[2], Sandor Rozsa[3], and Albert Bandura[4]

[1]University of Rome "La Sapienza," Italy, [2]The Maria Grzegorzewska College for Special Education, Warsaw, Poland, [3]Eotvos Lorand University of Budapest, Hungary, [4]Stanford University, Stanford, CA, USA

Summary: The present study investigated the replicability of the factor structure of the Children's Perceived Self-Efficacy scales (CPSE; Bandura, 1990) in Italy, Hungary, and Poland. The findings of this cross-national study support the generalizability of the factor structure of children's social and academic efficacy. Perceived efficacy to resist peer pressure to engage transgressive conduct had a somewhat different factor structure for Hungarian children. Gender and national differences in the pattern of efficacy beliefs underscore the value of treating perceived self-efficacy as a multifaceted attribute. There were no overall gender differences in perceived social efficacy, but girls in all three societies have a higher sense of efficacy for academic activities and to resist peer pressure for transgressive activities. Italian children judge themselves more academically efficacious than do Hungarian children and more socially efficacious than their counterparts in both of the other two countries. An analysis of the facets of academic efficacy revealed that Hungarian children have a high sense of efficacy to master academic subjects but a lower efficacy than their Italian and Polish counterparts to take charge of their own learning. Polish children surpassed their counterparts in academic self-regulatory efficacy.

Perceived self-efficacy concerns people's beliefs in their capabilities to produce given attainments. This construct was developed by Bandura (1977) within a social-cognitive theory of human functioning. According to this perspective, sense of personal efficacy is a key factor in the exercise of human agency within a causal structure involving triadic reciprocal causation between the person, the environment, and behavior (Bandura, 1986). People proactively organize and regulate their lives. Self-regulation of human action is not a passive reaction to the disequilibrium created by environmental forces (discrepancy reduction), but rather reflects active and proactive control people exert by setting challenging goals that create states of disequilibrium (discrepancy production). Reactive control comes into play when subsequent adjustments in the strategies and effort are needed in order to reach desired goals (Bandura, 1991).

Within a developmental perspective, the exercise of personal control is progressively achieved through the perception and the understanding of causal relations between events, and through the recognition of oneself as the agent of action. During the early phases of life social environment plays an influential role in the acquisition of knowledge about oneself and the external world. Children's functioning gradually progresses from external to personal control.

Once children acquire a sense of personal agency that they can make things happen, they develop affective self-reactions that serve as guides and motivators for action. A body of research shows that perceived efficacy is a common mechanism through which psychosocial influences produce their effects (Bandura, 1977).

Efficacy beliefs produce their effects through four major processes that usually operate in concert: cognitive,

motivational, affective, and selection processes. Managing difficult tasks requires considerable effort to remain task oriented and requires being able to use analytic thought. People of high efficacy set challenging goals for themselves and regulate the effort necessary to reach the goal and overcome impediments or threats. Efficacy beliefs also exert a major influence on stress and depression and the choice people make.

Simply saying that one is capable is not necessarily self-convincing. Self-efficacy beliefs are the product of a complex process of self-persuasion that relies on the cognitive processing of diverse sources of efficacy information conveyed directly, vicariously, socially, and physiologically (Bandura, 1997).

The family is the first source of efficacy information for children. During the early period of life, parents mediate the child's transactions with the environment. Because of this dependency children quickly learn how to influence the actions of their caretakers. Parents who are responsive to their child's communication create the opportunity for efficacious actions and offer a variety of mastery experiences so that children readily acquire linguistic, social, and cognitive competencies. Experiences of success contribute to the build-up of a sense of personal efficacy. Conversely, failure experiences undermine perceived self-efficacy.

Peers are the second source of efficacy information. As the social world of a child rapidly expands, peers become an important source of information concerning one's capabilities. In this context children experience new relationships that can enlarge and validate their own personal capabilities.

School is the third source of efficacy information. During a child's formative period, teachers serve as important contributors to the formation of a child's intellectual efficacy. Children's appraisals of their capabilities are heavily affected by the way teachers evaluate their performances and help them to develop self-regulatory skills in managing learning activities.

The measurement of the self-efficacy construct requires clarifying how it differs from other constructs such as self-esteem, self-competence, and locus of control. Perceived self-efficacy is concerned with people's beliefs in their capability to produce a given level of attainments (Bandura, 1997). People differ in the area of life in which they cultivate their sense of efficacy. Beliefs in personal efficacy to manage the demands of social, familial, or occupational life may vary widely across different domains of functioning. The efficacy belief system is not a global trait, but a differentiated set of self-beliefs linked to distinct realms of functioning. Scales of perceived self-efficacy must be tailored to the particular domain of functioning that is object of interest.

Self-esteem and self-efficacy are sometimes used in-terchangeably, though they represent entirely different phenomena. Self-efficacy is concerned with judgments of personal capability, whereas self-esteem is concerned with judgments of self-worth. People may judge themselves inefficacious in a given activity without any loss of self-esteem, if they do not invest their self-worth in that activity. Conversely, a person may feel highly efficacious in a certain activity but take no pride in performing it well if it reflects injurious consequences on others. People can gain self-esteem only by setting low standards of achievement or by fulfilling standards of merit in desired activities. Perceived personal efficacy predicts the goals people set for themselves and their performance achievements, whereas self-esteem neither influences personal goals nor academic performance (Bandura, 1997).

Perceived self-efficacy differs from the self-concept of ability. Self-efficacy theory acknowledges the diverse and multifaceted nature of human capabilities. Self-concept of ability is a global self-judgment. In comparative tests of predictive power, domain-linked beliefs of personal efficacy were predictive of behavior, whereas the relationship to global self-concept was weak (Pajares & Kranzler, 1995; Pajares & Miller, 1994).

Locus of control is also often confused with perceived self-efficacy. Locus of control is concerned with whether one's fate is determined by one's own action or by external forces. The belief that one can produce different levels of performance attainments (perceived self-efficacy) is conceptually different from beliefs about whether those performances will affect certain outcomes (locus of control). As in the case of the other comparisons, perceived self-efficacy is a stronger and more connected predictor of diverse forms of behavior than is locus of control (Bandura, 1997).

The Children Perceived Self-Efficacy (CPSE) scales were developed by Bandura (1990) to measure different domains relevant to children's life during preadolescence. Previous studies (Bandura, 1993; Zimmerman, 1995) showed that self-efficacy beliefs influence the development of cognitive competencies. In particular, the studies of Zimmerman (1995) and Bandura (1993) show that children's beliefs in regulating their own learning and in mastering different academic subjects affect their level of motivation and academic achievement. Moreover, efficacy beliefs to form and maintain social relationships as well as to resist peer pressure to engage in transgressive activities affect prosocial conduct and reduce the involvement in antisocial activities and substance abuse (Bandura, 1993; Bandura, Barbaranelli, Caprara & Pastorelli, 1996).

The CPSE is a set of multidimensional scales composed of 37 items representing seven domains of functioning. These include:

1. Self-efficacy for academic achievement measures children beliefs in their capabilities to master different subject matters.
2. Self-efficacy for self-regulated learning assesses children's efficacy to structure environments conducive to learning and to plan and organize academic activities.
3. Self-efficacy for leisure and extracurricular activities assesses children' beliefs that they can carry out recreational and student group activities.
4. Self-regulatory efficacy assesses children beliefs to resist peer pressure to engage in high-risk activities involving alcohol, drugs, and transgressive conduct.
5. Perceived social self-efficacy assesses children beliefs in their capability to initiate and maintain social relationships and to manage interpersonal conflicts.
6. Self-assertive efficacy measures children's perceived capability to voice their opinions, to stand up to mistreatment, and to refuse unreasonable request.
7. Perceived self-efficacy to meet others' expectations measures children's beliefs in their capability to fulfill what their parents, teachers, and peers expect of them, and to live up to what they expect of themselves.

Results of the factorial study conducted on Italian sample revealed a three-factor structure (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). The first factor, perceived *academic self-efficacy*, included high loadings on items measuring perceived capability to manage one's learning, to master academic subjects, and to fulfill personal, parental, and teacher academic expectations. The second factor, perceived *social efficacy*, was loaded with items measuring perceived capability for peer relationships, for self-assertiveness, and for leisure time group activities. The third factor, perceived *self-regulatory efficacy* was loaded with items measuring perceived capability to resist peer pressure to engage in high-risk activities. The α reliability coefficients for the three factors were .87 for academic self-efficacy, .75 for social efficacy, and .80 for self-regulatory efficacy.

The present study investigated the replicability and generalizability of the factor structure of CPSE scales in three different countries with three different languages: Italy, Hungary, and Poland. In addition to examining the factor structure, the study examined perceived self-efficacy as a function of gender and national origin.

The multidimensional scales were first translated into Italian and then backtranslated into English to verify the accuracy of translation. The American author of this paper consented with the Italian authors on the Italian version. Furthermore, the colleagues from Eastern Europe provided the Hungarian and Polish versions of the scales, respectively. They were backtranslated into English and Italian by two independent persons who were respectively Polish–English, Hungarian–English, and Polish–Ital-

ian and Hungarian–Italian speakers. The two versions were revised by the American author and by the Italian authors of this paper, respectively. The final version was discussed by all authors involved in this study.

Method

Subjects and Procedure

A total of 1180 children ranging in age from 10 to 15 years participated at the study.
– The *Italian* sample comprised 456 males and 366 females with a mean age of 12.3. Children were drawn from the fifth, sixth, and seventh grade in two middle schools in a residential community located near Rome. Students were from middle-class families.
– The *Hungarian* sample contained 113 males and 106 females with a mean age of 12.9. Children were drawn from the fifth, sixth, and seventh grade in three middle public schools located in Budapest and in two neighboring towns (Nagykovacsi, Szeged). Students were from middle-class families.
– The *Polish* sample included 74 males and 69 females with a mean age of 12.2. Children were drawn from the fifth, sixth, and seventh grade in two schools located in Warsaw. Students were from middle-class families.

All three countries used a standardized administration procedure developed in Italy. The two researchers from Hungary and Poland were trained in Italy over a 2-month period.

Children were administered the 37 items representing seven domains of functioning that formed the three basic factors, during morning classes in their schools:
– *Perceived Academic Efficacy* included 19 items tapping different domains of academic activities: 7 items measured children's beliefs in their capability to master different areas of coursework (mathematics, sciences, etc.); 10 items measured perceived efficacy for regulating ones own motivation and learning activities; and 2 items measured efficacy beliefs to parental and teacher expectations (see Appendix A).
– *Perceived Social Efficacy* included 13 items tapping different social domains: 3 items measured efficacy for leisure and extracurricular group activities; 5 items measured children's beliefs to form and maintain social relationships and to manage interpersonal conflicts; and 5 items measured self-assertive efficacy (see Appendix A).
– *Self-Regulatory Efficacy* included 5 items that measured children's capability to resist peer pressure to

engage in high-risk activities such as alcohol, drugs, and transgressive activities that can get them into trouble (see Appendix A).

For each item, the children rated their belief in their level of capability to execute the designed activities using a 5-point response format.

Analysis

The cross-cultural generalizability of the CPSE was tested using two different data analytic strategies: exploratory factor analysis (EFA) and simultaneous component analysis (SCA).

– In EFA, the same number of factors are extracted and rotated from the same variables in the different national samples. Then a pattern-matching coefficient (for example, the congruence coefficient developed by Tucker, 1951) is used to compare solutions in the different data sets. A coefficient of above .90 indicates a good match among hypothetical factors in different data sets.

– The SCA procedure determines and evaluates a common factor/component description for a set of different groups based on the same set of variables (Kiers, 1990; Kiers and Ten Berge, 1989).

Means and standard deviations were computed on scores for each scale and separate ANOVAs were performed to evaluate gender and country differences. Then, group differences were tested using Tukey Honest Significant Differences for unequal N.

Results

Principal Component Analysis (PCA) and Congruence Coefficients

The scree test of eigenvalues (Cattell & Vogelmann, 1977) reveals three principal factors in all three countries (Figure 1). The results of the principal component analysis (3 factor extraction) are reported in Table 1.

In the Italian sample, the first three factors explained 35.9% of the total variance. Their order of emergence in the rotated solution, according to the amount of variance explained, was as follows: perceived academic efficacy (24%), perceived social efficacy (6.8%), and self-regulatory efficacy (5.1%).

In the Hungarian and Polish samples the first three factors explained 33.5% and 43.3% of the total variance, respectively. The same order of emergence in the rotated

solution occurred in Hungary and Poland as in Italy (Hungary: 20.6%, 7.8%, 5.1%; Poland: 28.7%, 8.1%, 6.4%).

In all three countries most of the items showed main primarily loadings on the intended factors, with the exception of few items for Hungarian and Polish samples (see Table 1). Regarding academic efficacy, in all countries most of the loadings on the first components are above .30 with the exception of two items, 12 and 28 for the Hungarian sample, and 27 and 28 for the Polish sample. In the case of Hungary, the item 12 assessed self-regulation of learning, which has higher loading in self-regulatory efficacy, item 28 concerns self-efficacy to meet teacher expectations, which has higher loading on social efficacy. In the case of Poland, both items 27 and 28, which measure efficacy beliefs to meet parental and teacher expectations cross-load on social efficacy and self-regulatory efficacy.

In the case of social efficacy, most of the item loadings on this component for the three countries are above .30, with the exception of items 21 for Polish sample and 29 for Hungarian sample, which refer to efficacy beliefs in leisure-time activities and efficacy to meet peer expectations, respectively.

Finally, in the case of self-regulatory efficacy, most of the loadings are above .40 for Italian children, whereas for Hungarians and Polish some items load or cross-load on academic and social factors.

The α reliability coefficients are high for all three countries (*Academic Efficacy:* .87 for Italy, .86 for Hungary, .89 for Poland; *Social Efficacy:* .81 for Italy, .72 for Hungary, and .86 for Poland; *Self-Regulatory Efficacy:* .74 for Italy, .57 for Hungary, .78 for Poland), except for self-regulatory efficacy, which shows a lower value for the Hungarian sample.

In sum, the same factor structure was obtained for academic and social efficacy in all three countries; however, the self-regulatory efficacy factor was less stable and less reliable especially in the Hungarian sample.

Results of the comparisons of the factorial structure among countries using congruence coefficient (Table 2) clearly confirm that the highest degree of convergence is obtained for academic and social efficacy and the lowest convergence is obtained for self-regulatory efficacy, especially in the comparison between Hungarian and Polish samples (.46).

In this regard, although we must take into consideration that the Eastern European countries have a lower sample size compared to the Italian sample, the highest degree of congruence between Italy and Poland for self-regulatory efficacy (.82) might suggest that other factors are affecting the definition of this component. Our results indicate that self-regulatory efficacy is defined differently especially in the Hungarian sample because of the

Table 1. Rotated factor matrix: Principal component analysis, loadings in Italian, Hungarian, and Polish samples.

	Academic			Social			Self-Regulatory		
	ITA	HUN	POL	ITA	HUN	POL	ITA	HUN	POL
ACADEMIC									
ITEM1	.427	.543	.546	.179	.072	.130	.127	.078	.174
ITEM2	.580	.475	.751	.141	.120	.134	−.060	.083	.196
ITEM3	.497	.505	.746	.185	.117	.026	.087	.295	.170
ITEM4	.585	.609	.623	−.020	.120	.115	.049	.164	.162
ITEM5	.603	.555	.565	.049	.159	.104	−.010	.113	.189
ITEM6	.608	.593	.753	.124	−.096	.049	.070	.103	.087
ITEM7	.529	.632	.595	.089	.044	.140	.073	.062	.017
ITEM8	.524	.516	.513	.153	.087	.273	.155	.017	.127
ITEM9	.643	.498	.344	−.016	.052	.278	.081	.075	.154
ITEM10	.608	.693	.595	.157	.152	.171	.111	.165	.276
ITEM11	.446	.584	.642	.060	.149	.158	.123	.096	.220
ITEM12	.475	.115	.637	.198	.168	.082	.267	.450	−.020
ITEM13	.603	.425	.573	.231	.409	.291	.143	.351	.061
ITEM14	.548	.365	.544	.255	.371	.390	.193	.354	.154
ITEM15	.469	.539	.670	.222	.101	.245	.160	.029	−.066
ITEM16	.383	.362	.294	.226	.297	.402	.138	.235	−.080
ITEM17	.704	.575	.426	.137	.116	.428	.142	.165	.021
SOCIAL									
ITEM18	.278	.328	.367	.425	.359	.444	.115	.017	−.137
ITEM19	−.028	.009	.114	.636	.566	.613	−.111	−.017	−.074
ITEM20	.092	−.050	.210	.600	.615	.531	−.134	−.038	.108
ITEM21	.125	.292	.193	.665	.528	.015	−.093	−.249	.533
SELF-REGULATORY									
ITEM22	.109	.254	.393	.126	.089	.069	.567	.401	.206
ITEM23	.162	.124	.414	.064	−.094	.106	.432	.762	.525
ITEM24	.103	.009	.221	.047	−.095	−.049	.776	.782	.714
ITEM25	.166	.111	.159	.030	.050	−.112	.779	.271	.794
ITEM26	.201	.333	.375	.218	.183	.355	.572	.020	.618
ACADEMIC									
ITEM27	.460	.599	.072	.268	.110	.390	.189	.164	.479
ITEM28	.674	.227	.196	.098	.425	.517	.165	−.071	.388
SOCIAL									
ITEM29	.273	.257	.029	.434	.183	.588	.117	−.228	.334
ITEM30	.295	.169	.085	.399	.643	.330	.147	−.167	.615
ITEM31	.200	.192	.068	.482	.538	.586	.089	−.072	.106
ITEM32	.099	.220	.115	.576	.601	.599	.018	−.006	.281
ITEM33	.105	.289	.105	.538	.550	.620	.240	.038	.283
ITEM34	.330	.136	.185	.416	.449	.746	.209	.203	.102
ITEM35	.099	.081	.098	.635	.533	.605	.237	.029	.176
ITEM36	.070	−.016	.276	.502	.542	.435	.351	.234	.274
ITEM37	.128	−.060	.111	.481	.350	.336	.253	.208	.452

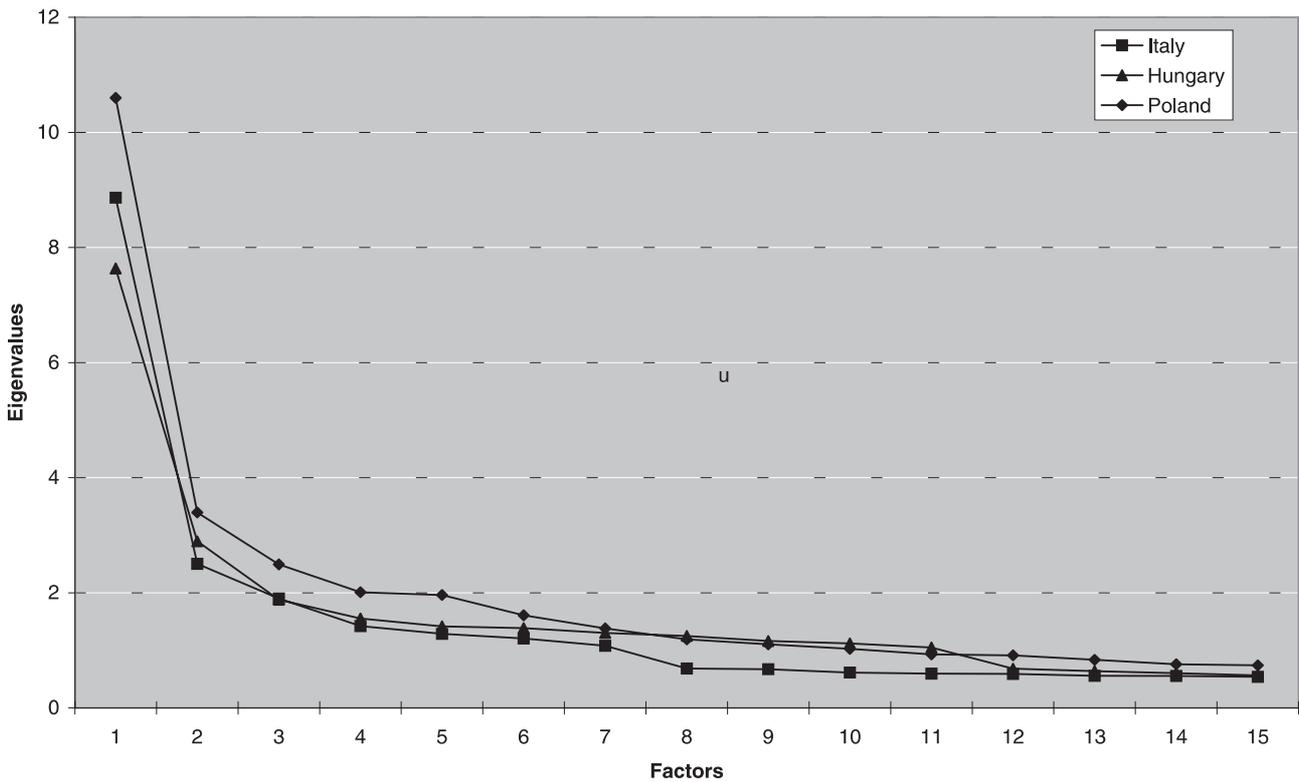*Note*: ITA = Italy; HUN = Hungary; POL = Poland

Figure 1. Scree test of eigenvalues.

Table 2. Comparison of the factorial structure among countries (Tucker Congruence Coefficient).

Self-efficacy	Italy–Hungary	Italy–Poland	Hungary–Poland
Academic	.94	.91	.90
Social	.86	.93	.88
Self-regulatory	.70	.82	.46

Table 3. Percentage of variance explained for by simultaneous component analysis (SCA) and principal component analysis (PCA).

Country	SCA	Separate PCA
Italy	35.30%	35.86%
Hungary	32.49%	33.54%
Poland	43.65%	44.57%

behavior of two items, which show respectively low loading (item 25) and no relation with the theoretical component (item 26). Furthermore, item 12 shows no relation with the intended component (academic efficacy) and primary loading on self-regulatory efficacy. Future research needs to expand the sample size in the Eastern country samples and the number of items representing self-regulatory efficacy.

Simultaneous Component Analysis (SCA)

The SCA program (Kiers, 1990) was used to perform the simultaneous components analysis. The goodness of the SCA solution was examined by comparing the percentage of variance accounted for by the SCA solution and by separate PCA solutions.

In SCA, an investigator has K data sets, each consisting of the same set of V variables. The problem is to describe this set in terms of smaller number (F) of components or factors, each of which is a linear combination of V variable. The number of factors is determined in advance by the investigator (theoretically or empirically). The aim is to determine the element of matrix W of dimensions V × F with these properties: (1) each column W contains the V weights that can be used to compute the components, and (2) the variance explained by the components in all K groups is maximal.

The three data sets were examined by comparing pattern matrices derived from each data set, by the Tucker congruence coefficient.

Similarities among components identified by SCA and factors identified by PCA were explored by computing Pearson correlation coefficients between factors and component scores in each data set (Zuckerman et al., 1991).

The evaluation of goodness solution involves a set of comparisons (one for each data set) of the percentage of variance explained in one data set by the F components defined in W and the percentage of

variance explained in the same data set of F component determined by PCA performed on that group alone (the latter represents the highest possible measure of variance explained for that group): If the percentage of variance explained by the components derived from SCA results only slightly inferior to the percentage of variance explained by PCAs "then the same linear combinations of the variables can be used in all populations to describe data adequately" (Kiers, 1990, p. 16).

As shown in Table 3, the explanatory power of the common components extracted by SCA is just slightly less than those of separate PCAs for all three data sets. For all scales, the percentage of variance explained by SCA and PCA differs very little, testifying that the behavior of the items does not change dramatically from one language to another.

After the good quality of the SCA was established, the next analysis focused on an interpretation of the common

Table 4. Congruence coefficients among Italian, Hungarian, and Polish structure and pattern matrices derived from simultaneous component analysis (SCA).

Self-efficacy Domains		I/H	I/P	H/P
Academic	S	.971	.975	.936
	P	.936	.887	.861
Social	S	.945	.976	.939
	P	.888	.937	.881
Self-regulatory	S	.939	.951	.875
	P	.886	.822	.645

Note: S = Structure matrix; P = Pattern matrix; I/H = Italy/Hungary; I/P = Italy/Poland; H/P = Hungary/Poland

Table 5. Congruence coefficients between components derived from SCA and PCA.

Country	Academic	Social	Self-regulatory
Italy	.99	.99	.98
Hungary	.99	.98	.98
Poland	.95	.96	.97

Table 6. Means and standard deviations for the three self-efficacy components shown separately by gender and national origins.

	Italy M (SD)	Hungary M (SD)	Poland M (SD)
Academic			
m	68.97 (13.38)	66.59 (13.98)	68.93 (12.86)
f	73.66 (11.34)	69.35 (10.64)	71.79 (13.01)
Social			
m	53.93 (7.45)	50.38 (7.91)	50.62 (7.90)
f	53.75 (7.54)	50.09 (6.35)	51.60 (8.54)
Self-Regulatory			
m	19.73 (4.25)	20.24 (3.93)	20.00 (4.86)
f	20.79 (4.27)	20.94 (2.73)	21.75 (3.46)

Note: m = males; f = females

components. Pattern and structure matrices derived from SCA were compared across the three data sets by means of Tucker congruence coefficient. As Table 4 shows, with the single exception of the comparison between Hungary and Poland in self-regulatory efficacy, all coefficients are close or above .90 showing an high degree of correspondence.

Furthermore, in order to investigate the correspondence among PCA and SCA components, factor congruence coefficients have been computed between factor structures presented in Table 1 and pattern and structure matrices derived from SCA solutions. As evident in Table 5, the PCA and SCA analyses yield virtually the same self-efficacy component in the three countries. The correlation matrices of the different components produce the same latent structure, no matter which national origin is considered.

Self–Efficacy as a Function of Gender and National Origin

Table 6 reports the means and standard deviations for the set of efficacy scales, separately by gender and country. To examine possible gender and country differences, we conducted a 3 (country) × 2 (sex) ANOVA separately for the total score for each of the three self-efficacy components.

Regarding perceived academic efficacy, the results of ANOVA reveal significant main effects for gender and country. Girls judge themselves significantly more efficacious in academic achievement than do boys ($F(1,1179) = 30.165$; $p < .0001$). The significant country effect ($F(2, 1179) = 5.937$; $p < .001$) shows that Italian children judge themselves more academically efficacious than do Hungarian children ($p < .05$). Italian and Polish children do not differ in this regard. No significant gender by country interaction was found.

Regarding social self-efficacy, the results of ANOVA reveal a significant country effect ($F(2,1179) = 24.137$; $p < .0001$). Italian children judge themselves more socially efficacious than do Hungarians ($p < .05$) or Polish children ($p < .05$). Neither gender nor the interaction between gender and country was significant.

Analysis of self-regulatory efficacy disclosed a significant effect because of gender. Boys express a weaker efficacy to resist peer pressure to engage in transgressive activities than do girls ($F(1,1179) = 20.688$; $p < .0001$). There were no significant main effect for country and the interaction effect.

In order to further explore the significant differences in the perceived academic efficacy, we disentangled the three facets that compose this scale. They include items

related to efficacy beliefs for academic achievement (learning school subjects such as math, language, etc.), for self-regulated learning (planning your studying activities, studying when you have something interesting to do), and for fulfilling parental and teacher expectations.

Results of 3 (country) × 2 (sex) ANOVAs conducted separately for each of the facets reveal a more refined patterning of national differences in perceived academic efficacy. With regard to overall perceived academic efficacy, the analysis confirms the main effect for gender: $F(1,1179) = 13.714$: $p < .0001$ and country: $F(2,1179) = 24.686$; $p < .0001$. However, Tukey multiple range test for differences reveal that Hungarian boys judged themselves more efficacious ($M = 25.09$) to master academic subjects than did Italian children ($M = 22.58$; $p < .05$) or Polish children ($M = 22.25$; $p < .05$). With regard to self-regulated learning, the analysis confirms the main effect for gender ($F(1,1179) = 36.252$; $p < .0001$) and country ($F(2,1179) = 9.192$; $p < .0001$). In this case, Hungarian children perceived themselves as less efficacious in regulating their motivation and activities conducive to learning ($M = 38.68$) than Italians ($M = 41.03$; $p < .05$). With regard to perceived efficacy to fulfill parent and teachers expectations, finally similar results are obtained for the gender ($F(1,1179) = 11.085$; $p < .0001$) and country effect ($F(2,1179) = 7.223$; $p < .001$). However, Tukey multiple range test for differences reveal that Polish students ($M = 8.03$) perceive themselves as more capable than Italians ($M = 7.45$; $p < .05$) and Hungarians ($M = 7.40$; $p < .05$).

Discussion

The findings of this cross-national study provide support for the generalizability of the factor structure of children's self-efficacy beliefs across Eastern and Western European countries. The psychometric characteristics of the scales appear satisfactory for the three countries. However, perceived self-efficacy to resist social pressure to engage in transgressive activities (self-regulatory) had a somewhat different factor structure and a lower reliability for Hungarian children.

Evidence for the multifactorial nature of efficacy beliefs underscores the importance of treating self-conception of efficacy as a multifaceted attribute rather than as a global trait. Validation studies testify to the explanatory and predictive gains of domain-linked measure of perceived efficacy. Not only do they operate differently in different spheres of functioning, they affect other social, cognitive, and emotional determinants in unique ways (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996,

1997; Bandura, Pastorelli, Barbaranelli, & Caprara, 1999).

The gender and national patterns of differences further underscore the value of multifaceted measures of perceived self-efficacy. Whereas boys and girls do not differ in perceived social efficacy, girls have a higher sense of efficacy for academic activities and to resist peer pressure to engage in transgressive activities. It is interesting that, across societies, girls have a higher sense of academic efficacy, though at the occupational level there is a sharp gender differentiation with women generally occupying the lower-status jobs (Reskin, 1991). Despite their talents, societal socialization practices tend to undermine women's beliefs in their efficacy for occupations traditionally dominated by men (Bussey & Bandura, 1999; Hackett & Betz, 1981; Lent, Brown, & Hackett, 1994).

Even as early as middle school, children's beliefs in their occupational efficacy, which are rooted in their patterns of perceived efficacy, have begun to crystallize and steer their occupational considerations in directions congruent with their efficacy beliefs, social, self-regulatory and academic efficacy (Bandura, Barbaranelli, Caprara, & Pastorelli, 1997). Stereotypic gender occupational orientations are closely linked to the structure of their efficacy beliefs. Girls judge themselves as efficacious on service, clerical, caretaking, teaching, and artistic pursuits, whereas boys judge themselves more efficacious for careers in science, technology, computer systems, and physically active pursuits.

The cross-national gender differences in self-regulatory efficacy have a bearing on the more general issue concerning differential proclivities of boys and girls to resist peer pressure. Males are generally more directly aggressive than females, although the difference is smaller than is commonly believed and further diminishes with age and under conditions of provocation and presence of aggressive cues (Bettencourt & Kernaban, 1997; Bettencourt & Miller, 1996; Hyde, 1984). Girls' higher sense of efficacy to resist peer pressure for transgressive activities suggests another source of gender differences in antisocial proclivities. Evidence that perceived self-regulatory efficacy curtails dissocial behavior lends further support to this interpretation (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996).

The patterning of beliefs of personal efficacy also differed across national origins. Although we must be cautious in generalizing these results, considering the lower sample size for Polish and Hungarian students, Italian children judge themselves more academically efficacious than Hungarian children and more socially efficacious than both Hungarian and Polish children.

The fine-grain analyses of the various facets of perceived academic self-efficacy shed an interesting light

on the nature of the national differences in children's beliefs about their academic capabilities. Although Hungarian children judged themselves more efficacious than their counterparts in the other two countries in their capability to master academic subjects, they expressed a lower sense of efficacy to take charge over their own learning.

Future research may further explore whether the above pattern of differences reflects the educational practices of the different nations. In societies in which educational systems are heavily structured around authority relationships (Hofstede, 1991; Oettingen, 1995), students may develop a high efficacy for academic achievement under the close guidance of teachers and parents, but lack efficacy to manage their own educational development. Interestingly, the Polish children have a high assurance in their efficacy to exercise control over their own learning activities. This research was conducted in the midst of wrenching sociopolitical changes in Eastern Europe. Research relating to the social practices of educational systems to the structure of children's efficacy beliefs can add greatly to our understanding of sociocultural influences on children's efficacy development during their formative years.

Perceived efficacy to manage one's motivation and learning activities carries important personal and social implications. Both experimental and prospective studies verify the impact of academic self-regulatory efficacy on the course of academic achievement (Zimmerman, & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992). It operates on academic functioning not only in its own right but also by raising academic aspirations and self-evaluative standards for the quality of their academic work. The accelerated pace of social and technological changes are placing a premium on self-regulatory capabilities (Bandura, 1997). For example, modern educational technologies are transforming the educational system. Easy electronic access to instruction on virtually any subject is creating vast learning opportunities that transcend time and place. This learning process is being individualized and enables students to exercise considerable control over their own education. They can have the best libraries, instructional sites, and museums at their fingertips. Students will be educating themselves increasingly with multimedia instruction presented electronically by master teachers via the internet. Much learning will be occurring outside the confines of schools. Efficacious self-regulators will gain knowledge, skills, and intrinsic interests in intellectual matters; weak self-regulators will not achieve much progress in the self-development (Schunk & Zimmerman, 1994; Zimmerman, 1989, 1990).

The exercise of self-regulatory influence is also becoming a key factor in occupational life. In the past, employees learned a given trade and performed it in the same organization in much the same way throughout their lifetime. With the accelerated pace of informational and technological change, knowledge and technical skills are quickly outmoded unless they are updated to fit the new technologies. In the modern workplace, workers have to take charge of their self-development over the full course of their worklife. Electronically mediated instructions will serve as the main medium for self-directed learning of specialized knowledge and skills after one's formal schooling. Under societal changes that allow greater self-directness, those of high perceived efficacy make better use of opportunities (Speier & Frese, 1997).

Acknowledgments

References

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191–215.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1990). *Multidimensional scales of perceived academic efficacy*. Stanford, CA: Stanford University.

Bandura, A. (1991). Human agency: The rhetoric and the reality. *American Psychologist, 46*, 157–162.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28,* 117–148.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bandura, A., Barbaranelli, C., Caprara, G.V., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development, 67*, 1206–1222.

Bandura, A., Pastorelli, C., Barbaranelli, C., & Caprara, G.V. (1999). Self-efficacy pathways to childhood depression. *Journal of Personality and Social Psychology, 76*, 258–269.

Bandura, A., Barbaranelli, C., Caprara, G.V., & Pastorelli, C. (1999). *Efficacy beliefs as shapers of aspiration and occupational trajectories*. Stanford, CA: Stanford University.

Bettencourt, B.A., & Kernaban, C. (1997). A meta-analysis of aggression in presence of violent cues: Effect on gender differences and aversive provocation. *Aggressive Behavior, 23,* 447–456

Bettencourt, B.A., & Miller, N. (1996). Sex differences in aggression as a function of provocation: A meta-analysis. *Psychological Bulletin, 119*, 422–447.

Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development. *Psychological Review, 106*, 676–719.

Cattell, R.B., & Vogelmann, S. (1977). A comprehensive trial of the scree and KG criteria for determining the number of factors. *Multivariate Behavioral Research, 12,* 289–325.

Hackett, H., & Betz, N.E. (1981). A self-efficacy approach to the career development of women. *Journal of Vocational Behavior, 18,* 326–339.

Hyde, J.S. (1984). How large are gender differences in aggression? A developmental meta-analysis. *Developmental Psychology, 20,* 722–736.

Hoefstede, G. (1991).*Culture and organizations: Software of the mind*. London: McGraw-Hill

Kiers, H.A.L. (1990). *SCA: A program for simultaneous component analysis of variables measured in two or more populations*. Groningen, The Netherlands: iec ProGAMMA

Kiers, H.A.L., & Ten Berge, J.M.F. (1989). Alternating least squares algorithms for simultaneous component analysis with equal weight matrices in two or more populations. *Psychometrika, 54*, 467–473.

Lent, R.W., Brown, S.D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior, 45,* 79–122

Oettingen, G. (1995). Cross-cultural perspective on self-efficacy. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 149–176). New York: Cambridge University Press.

Pajares, F., & Kranzler, J. (1995). Self-efficacy beliefs and general mental ability in mathematical problem solving. *Contemporary Educational Psychology, 20,* 426–443

Pajares, F., & Miller, M.D. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: A path analysis. *Journal of Educational Psychology, 86,* 193–203.

Reskin, B.F. (1991). Bridging the man back in: Sex differentiation and devaluation of women's work. In J. Lorber & S.A. Farrel (Eds.), *The social construction of gender* (pp. 141–161). Newbury Park, CA: Sage.

Shunk, D.H., & Zimmerman, B.J. (1994). *Self regulation of learning and performance: Issues and educational applications*. Hillsdale, NJ: Erlbaum.

Speier, C., & Frese, M. (1997). Self-efficacy as a mediator and moderator between resources at work and personal initiative: A longitudinal field study in East Germany. *Human Performance, 10,* 121–192

Tuker, L.R. (1951). *A method for synthesis of factor analysis studies* (Personnel Research Section Report No. 984). Washington, DC: Dept. of Army.

Zimmerman, B.J. (1989). A social cognitive view of self-regulated learning. Journal of *Educational Psychology, 82*, 297–306.

Zimmerman, B.J. (1990). Self-regulating academic learning and achievement: An overview. *Educational Psychology Review, 2*, 173–201.

Zimmerman, B.J. (1995). Self-efficacy and educational Development. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 149–176). New York: Cambridge University Press.

Zimmerman, B.J., & Bandura, A. (1994). Impact of self-regulatory factors on writing course attainment. *American Educational Research Journal, 31,* 845–862.

Zimmerman, B.J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal-setting. *American Educational Research Journal, 29,* 663–676.

Zuckerman, M., Kulman, D.M., Thornquist, M., & Kiers, H. (1991). Five (or three) robust questionnaire scale factors of personality without culture. *Personality and Individual Differences, 9,* 939–941.

Concetta Pastorelli
Department of Psychology
University of Rome "La Sapienta"
Via dei Marsi 78
I-00185 Rome
Italy
Tel. +39 06 446-9115
Fax +39 06 499-17665
E-mail concetta.pastorelli@uniroma1.it

Appendix A

How well can you

1. learn general mathematics?
2. learn geography?
3. learn science?
4. learn Italian (English/Hungarian/Polish) literature?
5. learn Italian (English/Hungarian/Polish) grammar?
6. learn history?
7. learn foreign languages?
8. finish homework assignments by deadlines?
9. study when there are other interesting things to do?
10. concentrate on school subjects?
11. take class notes of class instruction?
12. use the library to get information for class assignments?
13. organize your school work?
14. plan your school work?
15. remember information presented in class and textbooks?
16. arrange a place to study without distractions?
17. motivate yourself to do school work?
18. participate to class discussions?
19. learn sport skills?
20. learn regular physical education activities?
21. learn the skills needed for team sports (for example, basketball, volleyball, swimming, football, soccer)?
22. resist peer pressure to do things in school that can get you into trouble?
23. stop yourself from skipping school when you feel bored or upset?
24. resist peer pressure to smoke cigarettes?
25. resist peer pressure to drink beer, wine or liquor?
26. stand firm to someone who is asking to do something unreasonable or inconvenient?
27. live up to what your parents expect of you?
28. live up to what your teachers expect of you?
29. live up to what your peers expect of you?
30. live up to what you expect of yourself?
31. make and keep female friends ?
32. make and keep male friends?
33. carry on conversations with others?
34. work in a group?
35. express your opinions when other classmates disagree with you?
36. stand up for yourself when you feel you are being treated unfairly?
37. deal with situations where others are annoying you or hurting your feelings?