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The Links among Action-Control Beliefs, Intellectual Skill, and School Performance
In Japanese, U.S., and German School Children

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Abstract

We compared the relationships among action-control beliefs, intellectual skill, and actual school performance in samples of children from Tokyo ($n = 817$, grades 2-6), Los Angeles ($n = 657$), and West Berlin ($n = 517$). Although these samples have been utilized in other comparative studies we have conducted, the role and function of intellectual skill, as measured by the RAVEN progressive matrices, has not before been examined. The results of our analyses predicting school performance from the action-control beliefs and the RAVEN scores were quite revealing. The amount of variance in actual school performance that was shared with (a) the children's action-control beliefs and (b) their RAVEN scores was very high in West Berlin (86%) and Tokyo (73%), but very low in Los Angeles (37%). These outcomes strengthen arguments that the comparatively high levels of personal agency, but low correlations with performance, are distinctive characteristics of U.S. socioeducational contexts.

This study focuses on one factor that may be relevant in understanding sociocultural differences in the links between children's action-control beliefs and their actual school performance; namely intellectual skill. In particular, we extend our prior cross-national comparisons by including a measure of intellectual skill (i.e., the RAVEN; Raven, 1972), which was available in three of our extant samples (West Berlin, Tokyo, and Los Angeles). This extension is important for understanding potential sources of the sociocultural differences we have found because a measure of intellectual skill provides an objective standard against which the teacher-assigned grades and the student-reported beliefs can be compared. For this study, then, we conduct a direct sociocultural comparison among Japanese, U.S., and German children regarding basic facets of their academic-related selves: (a) their beliefs about the causes of school performance, (b) their personal agency for school performance, (c) their intellectual skill.

An Action-Theory View of Psychological Control

We utilize a model of action-control beliefs that differentiates three action-related belief types: means-ends, agency, and control-expectancy beliefs (for overviews, see Little, 1998; Oettingen, 1995; Skinner, 1995). The causality-related means-ends beliefs refer to children's general beliefs about the utility or causal power of a specific means (effort, ability, luck, teachers, and unknowns) to produce a given outcome. Agency beliefs refer to children's beliefs that they personally can utilize, or have access to, the specific means that are relevant for school performance (effort, ability, luck, and teachers). The control-expectancy belief refers to children's general expectations of being personally able to produce a desired outcome (e.g., get good school grades) without specifying the means involved. These beliefs are measured with the Control, Agency, and Means-ends Interview (CAMI; see, Little, Oettingen, & Baltes, 1995a; Skinner et al., 1988).

In our cross-national comparisons using the CAMI, we have found important similarities and systematic differences in the mean-levels of these action-control beliefs and in their correlations with actual performance (Little, 1998; Oettingen, 1995). For example, both the rated importance

of causal factors such as effort and ability (i.e., means-ends beliefs) and the correlations between the means-ends beliefs and actual performance (school grades) have shown pronounced sociocultural similarities (see Little & Lopez, 1997; Little et al., 1995b; Oettingen et al., 1994; Stetsenko, Little, Oettingen, & Baltes, 1995). Sociocultural similarities in the means-ends beliefs indicate that children's "world views" about the causal factors involved in school performance (i.e., their subjective theories of school performance) are similar (Little & Lopez, 1997; Stetsenko et al., 1995). In conjunction with cognitive-developmental acquisitions and motivational processes, fundamental structural features of school contexts (e.g., instructional objectives and teaching formats) appear to contribute to the high similarity in the means-ends beliefs (Little & Lopez, 1997; Stetsenko et al., 1995). In contrast to the similar means-ends conceptions, our past research has shown pronounced sociocultural differences in two aspects of children's personal action-control beliefs (i.e., agency and control-expectancy beliefs).

First, the mean levels of the agency and control-expectancy beliefs have differed across the sociocultural contexts. Of the contexts we have studied, East Berlin children exhibited the lowest levels of personal agency and control expectancy whereas the Los Angeles sample included in the present analyses displayed the highest levels. The West Berlin children (also included in this study) were between these two extremes (e.g., Little et al., 1995b; Oettingen et al., 1994). Because a direct comparison with the Tokyo sample has not been conducted on all these dimensions, a precise statement of their location cannot be made, but they appear to also fall in the middle ground (see Karasawa et al., 1997).¹

Second, the correlational convergence between children's personal agency and control-expectancy beliefs and actual school performance has differed. In U.S. samples, the magnitudes of these relations between beliefs and performance have been rather weak with r s only around .3 (Little et al., 1995b; for a meta-analysis see also Multon, Brown, & Lent, 1991). In European samples (East Berlin, West Berlin, Moscow), we found that the beliefs-performance correlations

were quite strong, both cross-sectionally and longitudinally, with the correlations ranging between .5 and .7 (Little et al., 1995b; Little, Lopez, Oettingen, & Baltes, 2001; Oettingen et al., 1994; Stetsenko et al., 1995). In a prior report, we showed that agency beliefs shared 43% of the reliable variance with academic performance in the sample of West Berlin children, but only 15% of the variance in the Los Angeles sample (Little et al., 1995b).

These two patterns of sociocultural differences in (a) the mean levels of the action-control beliefs and (b) their differential correlations with school performance, revealed an intriguing distinctiveness in the U.S. sample. That is, the U.S. school children expressed the greatest sense of personal agency, but the lowest correspondence between these beliefs and actual school performance. This pattern is representative of other U.S. studies (see e.g., Multon et al., 1991), and therefore, appears to be a particular characteristic of U.S. settings (Little et al., 1995b).

Including a measure of intelligence was motivated primarily by our search for additional predictors of school achievement that might increase the predictability of the U.S. children's performance outcomes. We proceed from the assumption that the low beliefs-performance convergence commonly obtained in U.S. children (Multon et al., 1991) does not represent the entire story of the relations between children's person-related attributes and their school performance. We anticipated that measures of intellectual skill such as RAVEN intelligence would yield added predictive power, particularly in the U.S. context. Including an objective measure of intellectual skill provides yet another important piece of information for evaluating the source of the wide disparity in the beliefs-performance correlations we have observed. In this case, the measure of intellectual skill becomes a common standard against which the student-report beliefs and teacher-assigned grades can be compared.

General Expectations

The primary goal of this study was to extend our cross-national comparisons by examining the role of children's intellectual skill (see also Oettingen & Little, 1993). We were particularly

interested in the variance overlap between the children's action-control beliefs and intelligence (as measured by the RAVEN), as well as the predictive relations that the combination of RAVEN intelligence and action-control beliefs would have on the children's actual school performance. We expected that adding the RAVEN as an additional predictor of performance would close the gap in the predictive relations for the U.S. sample.

Our secondary goal was to establish the position of the Tokyo sample relative to the West Berlin and Los Angeles samples. Given that the German and Japanese educational systems share a number of common structural features (e.g., unidimensional teaching formats and selection criteria for advancement to higher-level secondary education tracks; see Karasawa et al., 1997; Oettingen et al., 1994), we expected the Tokyo sample to be closer to West Berlin than to Los Angeles.

Method

Participants

Our samples consisted 2nd through 6th grade children. As described in previous reports, we collected the West Berlin sample ($n = 517$) in spring, 1991, the Los Angeles sample ($n = 657$) in spring, 1992, and the Tokyo sample ($n = 817$) in winter, 1993. Each sample represented generally lower-middle class suburban neighborhoods (for more information on these samples see Karasawa et al., 1997; Little et al., 1995b; Oettingen et al., 1994). Longitudinal follow-ups of the West Berlin sample and other samples have revealed striking consistency in the pattern of results over the ensuing years (Little et al., 2001; Little, Stetsenko, & Maier, 1999). Given these findings, we have little reason to expect that the socioeducational contexts of these samples has changed and that the generalizability of these comparisons is not compromised nor undermined.

Table 1 contains the average ages and sample sizes by grade and gender. Note that the average ages at each grade level were generally similar in each setting, except the Tokyo sample which was somewhat younger at each grade level because their data were collected in winter. However,

the formal schooling experiences of these children were similar.

In each sociocultural context, we selected two schools, and within each school, generally two to four classes per grade level were evaluated. Supplementary analyses of possible between-school differences within each sociocultural setting indicated few and unsystematic mean-level differences, and furthermore, few and sporadic correlational differences for the variables in the analyses (Little et al. 1995a).

Measures

Action-control beliefs were measured by the 58-item CAMI questionnaire (Little et al., 1995a; 2001; Oettingen et al., 1994, for sample items). In each setting, native-language speakers and proctors group-administered the CAMI to the children (about 20 to 30 children per group). The proctors read each item aloud in front of the classroom and the children followed along, answering on a 4-point scale (never, seldom, often, always). We used the teacher-assigned math and verbal grades as two indicators of the children's School performance. In each setting, these class marks correlated highly (i.e., r s between .65 and .72).

We also group-administered the RAVEN progressive matrices as a test of intelligence. Although the RAVEN is putatively a culture-free index of intelligence, in these samples, we found a main-effect difference. The Tokyo children evinced higher scores on the RAVEN than the West Berlin children, who in turn, had higher scores than the Los Angeles sample ($F_{(2, 1931)} = 145.3, p < .001$). These mean-level differences do not confound for our focal analyses, because we used the RAVEN scores as an individual-differences variable within each sociocultural setting and the RAVEN does tap central aspects of intellectual skill in an objective manner, particularly in industrialized nations.

Data Analytic Procedures

We used multiple-group mean and covariance structures analyses (MACS; Little, 1997) for this study, because they (a) can verify the cross-cultural validity of the constructs and (b) correct for

the attenuating effects of unreliability. We included variables representing the effects of gender and the linear and quadratic effects of grade level in school to control for their potentially confounding influence (see Stetsenko et al., 2000, for a detailed analysis of gender effects, and Little, Stetsenko, & Maier, 1999, for grade-related effects). We did not include the agency for luck items for the Tokyo sample because they form two factors instead of one (see Karasawa et al., 1997, for details). We assessed model fit using standard indexes: the non-normed (NNFI) and incremental fit indexes (IFI) and the root-mean squared error of approximation (RMSEA).

We expected the item-to-construct relations would be metrically invariant, indicating that the constructs have been measured in an equivalent manner. To test this expectation, we specified two models and evaluated the differences in their relative fit (i.e., we used a difference-in-fit criterion for the NNFI and IFI of $< .05$; see Little, 1997). In the first model, we specified the basic measurement structure across the different groupings. This model fit very well: NNFI = .939, IFI = .952, RMSEA = .041. In the second model, we placed equality constraints on the measurement loadings and intercepts across each group and freed the corresponding latent variances and means in the 2nd and 3rd groups, but placed no constraints at the latent level (Little, 1997). This model also fit very well: NNFI = .908, IFI = .923, RMSEA = .048. Because these two models differed by less than the .05 difference-in-relative-fit criterion, we can conclude that the constructs' psychometric properties are measurement equivalence and, therefore, can offer substantive comparisons that are based on socioculturally comparable constructs (Little, 1997).

All further analyses were assessed against the measurement-equivalent model by placing cross-group equality constraints on the parameters of interest and evaluating the loss in fit as a nested model chi-squared test (see Little & Lopez, 1997). Below, we report the findings from the constrained analyses because (a) the constrained (equated) values did not differ from one another (multivariate- $p > .05$), while (b) all unequated values differed substantially (all $ps < .01$), and (c) the manner of presentation is thereby more parsimonious. For purposes of independent

examination, the unconstrained raw data estimates are given in the Appendix.

Results

We report our findings in four sections. The first three sections examine the position of the Tokyo sample relative to the U.S. and German samples. In the final section, we evaluate the roles of RAVEN intelligence and action-control beliefs in predicting academic performance.

Mean-level comparisons. As indicated in Figures 1 and 2, few sociocultural comparisons within a given means category were equivalent; however, a number of cross-dimension comparisons were ($\chi^2_{(16)} = 21.2, p = .17$ for the equivalent mean levels; each possible remaining comparison differed from one another, $p < .01$). Although we found more differences than expected, most of the commonalities emerged in the means-ends beliefs (as opposed to the agency and control-expectancy beliefs).

For the means-ends beliefs, the Tokyo children differed on each means category. Relative to Los Angeles and West Berlin, Tokyo children showed high endorsements for the importance of effort and moderately high endorsements for the importance of ability as causes of school performance (Figure 1). Tokyo children were also lower on luck and teachers, but higher on unknowns (see also Little & Lopez, 1997).

For the agency beliefs, including the Tokyo sample in a direct comparison did not change the extreme standing of the Los Angeles children (Figure 2). On the contrary, the Tokyo children showed the lowest beliefs in their personal access to effort and ability and in their general control expectancy.

Correlations with academic performance. The correlations in Figures 3 and 4 reflect the degree of correspondence between the children's actual school performance and (a) their general means-ends (causality) beliefs (Figure 3) and (b) their self-reports of their personal agency and control-expectancy beliefs (Figure 4). For these beliefs-performance links, we found considerable cross-cultural commonality ($\chi^2_{(24)} = 23.6, p = .50$ for the equivalent correlations; the other

correlations differed from one another, $p < .01$).

Regarding the means-ends beliefs, one distinctive pattern emerged wherein all three settings had differing magnitudes (and directions) of correlation for Means-ends: Ability (West Berlin $r = .15$, Los Angeles, $r = 0$, and Tokyo, $r = -.15$; see Figure 3). The sizes of the correlations for the means-ends beliefs are quite small (i.e., less than 3% explained variance), replicating patterns of predictive relations within this framework (e.g., Chapman et al., 1990; Oettingen et al., 1994).

For the agency and control-expectancy beliefs (Figure 4), the West Berlin sample showed generally higher beliefs-performance correlations than did the Tokyo children who were generally higher than the Los Angeles children.

Correlations with RAVEN intelligence. The correlations in Figures 5 and 6 reflect the relations between the children's intellective skills and their action-control beliefs about school performance. Before turning to these relations, we note here that in the Tokyo and West Berlin samples, the children's RAVEN intelligence scores correlated moderately strongly with their actual school performance ($r = .55$; i.e., 30% of the variance overlapped in both samples), whereas in the Los Angeles sample, this link was quite low ($r = .31$, or less than 10% overlap; $p < .01$).

Given these differences, however, we found considerable commonality in the beliefs-intelligence links ($\chi^2_{(26)} = 24.5$, $p = .56$ for the equivalent correlations; the other correlations differed from one another, $p < .01$). Notably, the patterns generally followed those for the beliefs-performance correlations, although the magnitudes of the relations with RAVEN intelligence were considerably lower than were the relations with actual performance (cf. Figure 3 with Figure 5 and Figure 4 with Figure 6).

For the agency beliefs, a few changes occurred (compare Figure 4 with Figure 6). First, Tokyo children showed a higher correlation between their personal agency for effort and RAVEN intelligence than did the Los Angeles children, and they showed a link between their agency for ability and intelligence that was equal to the West Berlin children's correlation. Second, the

sociocultural differences in the beliefs-performance correlations for Agency: Teachers and the Control Expectancy disappeared in these beliefs-intelligence links.

Predicting academic performance. Regarding the relative predictive power (variance shared) of the action-control beliefs in relation to the measure of intellectual skill (RAVEN intelligence), we performed latent-space commonality analyses predicting the children's academic performance from the set of agency beliefs (A), the set of means-ends beliefs (B), and the RAVEN intelligence scores (C).² Seven latent regression were conducted to determine the unique and common effects of these predictors: ABC together, AB together, AC together, BC together, and A, B, and C alone.

As seen in Figure 7, after including the children's RAVEN intelligence score into the analyses, the children's beliefs in their personal agency still accounted for unique (and generally sound) proportions of variance in West Berlin (13%) and Los Angeles (8%), but a more modest proportion in Tokyo (3%). The children's conceptions of the causal importance of these dimensions (i.e., means-ends beliefs) uniquely accounted for relatively smaller proportions of variance (3% in West Berlin, 2% in Los Angeles, and 2% in Tokyo).

Contrary to our expectation, RAVEN intelligence contribution very little to the predictive nexus in the Los Angeles sample, but did contribute considerably in the Tokyo and West Berlin samples (37% in Tokyo, 8% in Los Angeles, and 28% in West Berlin; for all comparisons, $p < .01$). The overall prediction of academic performance in these three sociocultural settings revealed that the beliefs-intelligence-performance nexus is quite substantial in Tokyo (73%) and West Berlin (86%) but quite small in Los Angeles with only 37% of the total reliable variance in school performance shared with the children's action-control beliefs and the RAVEN measure of intellectual skill.

Discussion

Including the Tokyo sample in a direct comparison with the U.S. and West Berlin samples, allowed us to locate precisely the relative position of Tokyo sample. Recall that Karasawa et al.

(1997) did not make direct comparisons and Lopez and Little (1997) examined only the relations among the means-ends beliefs. The direct comparison revealed a number of unique features of the action-control beliefs profile of the Tokyo sample. Therefore, before we turn to our discussion of the role of RAVEN intelligence in this evolving story, we first discuss the salient differences in the Tokyo children's profile and relate them, a posteriori, to known characteristics of their schooling contexts. Detailed discussion of the West Berlin schooling context can be found in Oettingen et al (1995) and of the U.S. context in Little et al. (1996).

Some Relevant Aspects of Japanese Children's Schooling Context

Numerous writers have suggested that Japanese children conceive of effort and ability differently than do children of other sociocultural settings, such as U.S. children (Hamilton, Blumenfeld, Akoh, & Miura, 1989a, 1989b; Holloway, 1988; Lewis, 1990). In Japan, exerting effort appears to be an intrinsically rewarding end in itself that reflects a style of personal behavior, typical of both adults and children, and explicitly instituted within the Japanese schooling context (Holloway, 1988). As a result, the effort concept in Japan appears to be highly differentiated both at the societal level and in the children's views about its importance and accessibility in producing school outcomes (see Karasawa et al., 1997, and Figures 1 and 2).

A typical feature of Japanese schools, for example, is the cooperative task structure in which children commonly participate (Holloway, 1988; Karasawa et al., 1997; Lewis, 1990). This schooling feature emphasizes group-based performance and evaluation relative to individual-based performance and evaluation. Arguably, a group-based emphasis not only teaches social cooperation and humility, for example, but it also reduces the degree to which an individual child can rely solely on his or her ability to perform well. Within this educational structure, all members of a heterogeneously defined ability group must exert effort in order for the group and its members to earn positive performance evaluations. In such a setting, the quality of a child's performance is judged relative to his or her previous performance level.

Such a school-based structure should highlight and distinguish effort relative to ability as a central means to increase one's performance (Holloway, 1988; Karasawa et al., 1997; Stigler & Perry, 1988). Our review of the relevant educational literature suggests that teachers and parents in Japan also make clear and pronounced distinctions between effort and ability -- they appear to emphasize effort and downplay ability more than do teachers and parents in Los Angeles and West Berlin. For example, teachers' verbal evaluations avoid commenting on children's ability and their absolute levels of academic performance. Instead, more emphasis is placed on extolling the children's efforts (Hamilton et al., 1989a, 1989b; Holloway, 1988; Stigler & Perry, 1988).

Reported correlational patterns between effort and ability support this notion. Compared to children of other sociocultural settings, Tokyo children's effort and ability conceptions are more differentiated (Little & Lopez, 1997). For example, Karasawa et al. reported that the Tokyo children's beliefs in their personal agentic access to effort and ability were less correlated ($r = .60$) than in other sociocultural contexts (e.g., r s generally .8 or higher; see Little et al., 1995b). In addition, many of the outcomes of this study are consistent with these basic features of Japanese children's societal and schooling context.

Possible effects on the mean levels. The apparent sociocultural distinctions between effort and ability in Japan are consistent with the Tokyo children's ratings of the importance of effort relative to ability (see means-ends beliefs in Figure 1) and in their reported access to these school-relevant means (see agency beliefs in Figure 2). The mean levels of effort (as a cause of school performance; Figure 1) were extremely high in the Tokyo sample, whereas their ratings of ability were comparatively low and nearly on par with their West Berlin age-mates (as indicated in Figure 1, the disparity between the effort and ability ratings was largest in the Tokyo sample). Similarly, the difference between the Tokyo children's ratings of their agency for effort and ability was the largest of the three sociocultural settings (i.e., more differentiated in terms of the mean levels; see Figure 2). Although the distinctiveness of the Tokyo children's ratings are very

consistent with the apparent socioeducational features of their schooling context, the absolute magnitudes of their reported access to the agency and control-expectancy dimensions were consistently the lowest of the three sociocultural contexts (Figure 2).

In our view, one reason for the lower agency and control-expectancy beliefs is the interpersonal relationship-based structures of child socialization in Japan (e.g., humility of self-presentation) that are pervasive sociocultural aspects of Japanese society (Azuma, 1996; Markus & Kitayama, 1991). Consistent with such structures, the agency and control-expectancy beliefs, as markers of the self-related action-control system, evinced comparable levels of individual-differences variability in these settings (with measurement equivalence in the respective reliability and validity of coefficients), but, as a group, the Tokyo children's perceptions of their agentic access to these school-relevant means were lower than the other sociocultural samples.

Whether relationship-based modulation of the self in conjunction with the associated humility in self-presentation reflect a true belief about oneself, or only the presented view of oneself, requires more detailed study. However, we view the lower mean levels of the Tokyo children's agency and control-expectancy beliefs as concordant with the sociocultural and socioeducational expectations placed on them. Moreover, within the confines of their sociocultural context the functionality of their agency beliefs becomes, in relative terms, a within-context individual-differences influence. To our knowledge, no theoretical or empirical criteria exist to determine an absolute level of agency that is optimal for negotiating the demands of a given environment (see Little et al., 1995b; Oettingen et al., 1994). As a result, the general advantages of high agency beliefs would be gained mostly through a process of relative comparisons with other children.

Possible effects on the beliefs-performance correlations. Given the mean-level distinction between effort and ability and the emphasis on effort relative to ability, one could view the correlational patterns between the Tokyo children's agency beliefs about these means and actual school performance as counter-intuitive (see Figure 4). Namely, because effort is a highly

emphasized school-relevant means in the Tokyo schooling context, one could expect the individual differences in the children's perceptions of their own effort to show substantial correspondence with actual school performance. However, only ability showed a pronounced link to school performance. More specifically, only 12% of the variance in the Tokyo children's beliefs in their own effort was shared with their actual academic performance, while over 36% of the variance in their beliefs in their own ability overlapped with their school grades (Figure 4). This pattern indicates that the distinguishing individual-differences dimension in the Japanese children's beliefs systems appears to lie in their perceptions of their own ability.

This relative pattern may simply reflect the actual importance of effort and ability-related inputs on the development of the children's self-perceptions. On the other hand, because of the emphasis on effort in the Tokyo schools, the role of effort may lose its meaning as a differential predictor of individual-differences in school performance (i.e., most everyone can and does try very hard). In any case, as a relatively under-emphasized dimension, which is still a central aspect in the social construction of performance, ability appears to remain a relatively context-independent gauge for the children to use in evaluating their own competence in school.

The substantial link between RAVEN intelligence and school performance indicates that in the Tokyo children's school context, their performance is moderately indexed to their intellectual skills. Specifically, the link between RAVEN intelligence and actual school performance was .55 in Tokyo and equal to the West Berlin context. Therefore, the objective contingencies between ability and performance appear to be reflected in the correspondence between the children's ratings of their own ability and actual school performance in both Tokyo and West Berlin. On the whole, the combined overlap of (a) the children's action-control beliefs, (b) the measure of intellectual skill, and (c) actual school performance produced a substantial nexus in both Tokyo (73%) and West Berlin (86%), but comparatively little in Los Angeles (37%).

The Role of Intelligence and the Distinctiveness of the U.S. Profile

A major goal of our program of research has been to use the comparative approach to examine the generality of action-control beliefs and to thereby place localized findings, such as those describing U.S. children, into a larger context. In our view, the presented findings highlight the distinctiveness of the Los Angeles children's action-control beliefs (Figures 1 and 2), their beliefs-performance nexus (Figures 3 and 4), their beliefs-intelligence nexus (Figures 5 and 6), and their beliefs-intelligence-performance nexus (Figure 7).

In prior studies, we presented evidence that the outcomes for the present Los Angeles sample are in congruence with typical findings reported in the literature (see Little et al., 1995b; Multon et al., 1991). In comparison to other sociocultural contexts, the Los Angeles children's belief in their personal agency is generally the highest and the correspondence between these beliefs and actual performance is generally the lowest. Notably, when we added RAVEN intelligence, we found that this index of the children's basic intellectual skills was hardly an influential aspect of the Los Angeles children's school performance, especially when compared with the Tokyo and West Berlin children. RAVEN intelligence shared less than 10% of its variance with actual school grades in the Los Angeles sample as opposed to the 30% overlap evinced in Tokyo and West Berlin. The Los Angeles children's action-control beliefs about their academic potential showed very weak correspondence with their intellectual skills (i.e., only control expectancy reached a 2% overlap with RAVEN intelligence). And finally, the combined effects of the children's action-control beliefs and RAVEN intelligence accounted for dramatically less variance in actual school performance in Los Angeles (37%) than was the case in Tokyo (73%) and West Berlin (86%; Figure 7). Such a pattern raises a number of critical questions. For example, if the Los Angeles children's action-control beliefs about their own school performance are only minimally related to their actual performance and their intellectual skills, what then are they related to? Is such a constellation a risk factor in the future development of these children? Perhaps the tendency in

U.S. settings (relative to other sociocultural contexts; Little et al., 1995b) to enhance children's self-esteem, although a worthy goal, may in fact have altered the natural progression of the action-sequences from which action-control beliefs are formed. For example, if one intervenes in this natural formation process at the stage of performance evaluation (Skinner, 1995) by verbally rewarding a child with performance feedback that is esteem-protective and supportive, then the child's beliefs would not be an accurate reflection of actual performance, but rather would reflect the degree of inaccuracy in the feedback. On the other hand, if the antecedents of good performance are targeted for intervention (e.g., through guided-mastery experiences; Bandura, 1997), then, because the remediated skills would lead to better performance, children would develop action-control beliefs that would reflect accurate assessments of their performance potential and actual performance.

The extreme standing of the Los Angeles children requires further study of the antecedents of such a prototypically U.S. profile and whether such a profile has long-term consequences on the perpetual interplay between the gains and losses of development (Baltes, 1987).

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Table 1

Sample sizes by gender, grade and combined, and average ages by grade

	Grade level					Total
	2	3	4	5	6	
West Berlin ($\underline{n} = 517$)						
Males	47	54	46	48	29	224
Females	65	61	67	56	44	293
Average age	8.6	9.6	10.6	11.6	12.7	
Los Angeles ($\underline{n} = 657$)						
Males	69	82	71	66	66	354
Females	72	50	67	58	56	303
Average age	8.1	9.2	10.2	11.1	12.2	
Tokyo ($\underline{n} = 817$)						
Males	72	83	92	96	83	426
Females	73	71	86	80	81	391
Average age	7.8	8.8	9.8	10.9	11.9	

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Footnotes

¹ In a previous validity analysis of the CAMI on this sample of Japanese (Tokyo) children, Karasawa et al. (1997) showed that the basic psychometric structure of the action-control beliefs was mostly comparable to that found in other sociocultural contexts. Of the 10 CAMI dimensions, only the children's agentic access to luck showed a substantive incongruence in these Japanese children (see Karasawa et al., 1997, for details). In addition, an analysis that explored the developmental relations among the causality-related means-ends beliefs in various sociocultural samples, and which included these Japanese children, found many cross-cultural similarities in the children's conceptions of how school performance comes about (Little & Lopez, 1997). Two notable differences that emerged were: (a) Tokyo children appeared to differentiate among the causes of school performance (e.g., effort, ability, luck, teachers) at younger ages than did their international peers (i.e., samples from Los Angeles, West Berlin, East Berlin, Moscow, and Prague), and (b) the importance of teachers as a contributor to school outcomes was rated far lower by the Tokyo sample than by their cross-national age-mates. However, a direct comparison to the extant U.S. and German samples on the agency and control-expectancy beliefs (are their relations to school performance) has not been conducted. Karasawa et al. (1997) focused their investigation only on the structure of the 10 CAMI dimensions and did not examine the relations to actual school performance nor did they directly compare their findings with other sociocultural samples. Similarly, Little and Lopez (1997) examined only the developmental patterns of the causality-related means-ends dimensions. Although they included direct comparisons, they did not examine the agency beliefs or links to performance.

² We did not include control expectancy because, as we have found before (Little et al., 1995b; Ottingen et al., 1994), it did not uniquely predict achievement.

Appendix

Comparative Raw data information

	Means-ends Beliefs					Agency Beliefs				
	Effort	Ability	Luck	Teacher	Unknown	Effort	Ability	Luck	Teacher	Control
Tokyo 1993 ($n = 817$)										
Mean	3.14	2.49	1.64	1.34	2.60	3.03	2.60	3.03	3.00	2.39
Std	.51	.55	.58	.45	.70	.50	.53	.64	.57	.62
r_{ach}	.12	-.14	-.12	-.17	-.10	.28	.42	.22	.10	.27
r_{int}	.23	.00	-.19	-.21	-.10	.16	.16	.12	.07	.11
West Berlin 1991 ($n = 517$)										
Mean	2.70	2.42	1.83	1.83	2.20	3.07	2.83	2.74	2.93	2.90
Std	.43	.47	.52	.46	.47	.49	.52	.49	.50	.62
r_{ach}	.12	.15	-.13	-.11	-.01	.50	.55	.50	.29	.41
r_{int}	.16	.01	-.31	-.17	.04	.20	.20	.04	.04	.07
Los Angeles 1992 ($n = 657$)										
Mean	2.87	2.24	1.86	1.84	2.17	3.14	2.95	2.87	2.90	3.29
Std	.50	.54	.63	.59	.59	.54	.56	.59	.61	.63
r_{ach}	.05	-.01	-.20	-.15	-.15	.28	.27	.32	.18	.16
r_{int}	.15	.05	-.24	-.12	-.15	.01	.02	-.03	.05	.10

Note. r_{ach} = the correlation with school grades, r_{int} = the correlation with RAVEN

intelligence.

Figure Captions

Figure 1. Latent mean levels for the means-ends beliefs [Note. Estimates that were not different from one another have been equated. The constrained estimates fit as well as the unconstrained estimates (multivariate $p > .05$). All remaining estimates that are not identical are different from one another at $p < .01$.].

Figure 2. Latent mean levels for the agency beliefs [Note. see note to Figure 1]

Figure 3. Latent correlations with academic performance for the means-ends beliefs [Note. see note to Figure 1]

Figure 4. Latent correlations with academic performance for the agency beliefs [Note. see note to Figure 1]

Figure 5. Latent correlations with RAVEN intelligence for the means-ends beliefs [Note. see note to Figure 1]

Figure 6. Latent correlations with RAVEN intelligence for the agency beliefs [Note. see note to Figure 1]

Figure 7. Results of the latent-space hierarchical regressions predicting academic performance from (a) the agency beliefs, (b) the means-ends beliefs, and (c) RAVEN intelligence.