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LOCUS OF CONTROL IN INTELLECTUAL SITUATIONS IN AMERICAN AND CHINESE SCHOOL CHILDREN

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The Intellectual Achievement Responsibility (IAR) Questionnaire, developed by Crandall et al., was administered to 720 children, 360 from the United States and 360 from Taiwan. The subjects were equally distributed in the sixth and eighth grades, and also by sex. A $2 \times 2 \times 2$ (culture, grade, sex) analysis of variance was performed separately on scores of the subscale of success experiences ($I+$) and subscale of failure experiences ($I-$). The results showed that: (a) American children obtained significantly higher $I+$ but lower $I-$ scores than Chinese children. (b) Sixth graders obtained significantly higher scores on both $I+$ and $I-$ subscales than eighth graders. (c) Boys scored significantly higher than girls on $I+$, but sex differences in $I-$ were not significant. It was also found that American children were more internal in success than in failure situations, while the reverse was true for Chinese children.

Psychological studies pioneered by Rotter (1966) have reported a wide range of individual differences in a person's perceptions of outcomes resulting from his or her behavior. Some people tend to believe that what happens to them is largely a matter of external forces that are beyond their personal control. Others tend to think that what happens to them is indirectly contingent upon their own behavior and is under their own control. This psychological variable has been called 'internal versus external control of reinforcements'.

The construct of locus of control is being increasingly emphasized in personality functioning (Lefcourt 1978; Phares 1976), since it appears to be related to or to influence several classes of behavior. Consequently, locus of control is being considered as an important construct in cross-cultural research (Dyal 1984). Examination of this variable may enhance our understanding of attitudes and motivation of specific

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cultural groups as well as provide information regarding personality development in a cross-cultural context, especially if the study is undertaken with children.

A number of researchers have sought to examine the relationship between locus of control and cultural variables. For example, Barling and Fincham (1978), Chandler et al. (1981), Gaa et al. (1981), McGinnies et al. (1974), Parsons and Schneider (1974), Reitz and Groff (1974), and Tyler and Holsinger (1981), have conducted studies on this variable as related to different cultures. The general findings have been that cross-cultural differences do exist as far as this personality characteristic is concerned. A belief in internal control appears in those societies which value and emphasize individual independence, self-reliance, and personal initiative, as is the case in the United States and westernized countries.

Although there is an increasing interest in cross-cultural studies on locus of control, very few investigations can be found in the psychological literature that have dealt with comparisons between American and Chinese cultures. Hsieh et al. (1969), comparing high school students from three cultural groups, found Hong Kong Chinese to be most external, American-born Chinese intermediate, and Anglo-Americans most internal in their beliefs in locus of control. By contrast, Christy (1978) discovered that it was Hong Kong Chinese who demonstrated a higher degree of internality than the American-born Chinese when she compared community college female students from the two societies. However, as pointed out by Lao et al. (1977), the Hong Kong Chinese should not be considered as typical Chinese, because Hong Kong has been a British colony for a long time, and many of the values and social expectations are a blend of both Chinese and British traditions.

The purpose of this study was to make comparisons between American children and Chinese children living in a more typical Chinese culture. Furthermore, the study intended to focus only on the beliefs in personal responsibility in intellectual-academic achievement situations. Thus, the Intellectual Achievement Responsibility (IAR) Questionnaire containing the subscales for success and failure events (Crandall et al. 1965) was adopted as a measuring instrument. The IAR was originally developed as a predictor of intellectual-achievement behavior. Evidence showed that IAR scores were related moderately but significantly to achievement-test scores and to report-card grades

(Crandall et al. 1965). Similar results were obtained in British primary school children (Reid and Croucher 1980) and in Chinese elementary school children (Wu 1975). In general, prediction of achievement behavior based on IAR scores is more consistent with males than with females.

In view of the contradictory findings reported in the related literature, no attempt had been made to formulate research hypotheses. Instead, the following questions were addressed: (a) Are there differences between American and Chinese children in patterns of internality in success and failure situations? (b) Are there differences in locus of control beliefs between American and Chinese children? Differences between grades and between sexes would be reported along with the comparisons between the two cultures, but the focus of the study was on the cross-cultural comparisons.

Method

Subjects

The American sample consisted of 360 children, with equal numbers of students in the sixth and eighth grades, and also with equal numbers of males and females in each grade. These children were selected from four different middle schools in the communities of middle- and working-class families in the north-central part of Indiana.

The Chinese sample was composed of exactly the same number of children for each grade and sex as the American sample. These children were drawn from four different elementary schools and four different middle schools located in the northern part of Taiwan. Their family backgrounds were also middle- and working-class.

The age of subjects from the two nations was almost identical. The median and quartile deviation of age for the American sixth graders were 12 years 1 month, and 4 months, respectively. The corresponding values for the Chinese counterparts were identical. The median and quartile deviation for the American eighth graders were 14 years, and 4 months, respectively. The corresponding values for the Chinese counterparts were 14 years, and 3 months.

The socioeconomic status of the two samples was comparable as far as the occupation of the head of household was concerned.

Ability level of the subjects was not measured. However, since they were selected from the regular classes with a normal range of general ability, it could be reasonably assumed that little difference between the sample existed.

Instrument

The IAR was used for the study. It consists of 34 forced-choice items, each of which describes either a positive or negative achievement experience and is followed by two

alternatives. One alternative states that the event is caused by the child's own behavior, while the other attributes the cause of the event to an external source. Half of the items describe positive experiences, and the other half, negative experiences.

The IAR yields three scores. An $I+$ score, consisting of the number of internal alternatives the child endorses for positive experiences, represents the degree of his belief in personal responsibility for successes. An $I-$ score, consisting of the number of internal alternatives the child chooses for negative events, indicates the extent of his belief in personal responsibility for failures. A total I score is the sum of these two scores.

The IAR was translated into Chinese by the author. To validate the authenticity of the original, the back translation method was used (Brislin 1980). After the original questionnaire was translated into Chinese, two psychologists who were fluent in both languages were asked to translate it back into English. A third person was consulted to resolve the disagreements. The wordings of two items of the original version were slightly modified to produce smooth and natural-sounding statements in the second language.

Since two items of the original questionnaire had been modified and a translated version was used in the study, it is advisable to estimate its reliability. The split-half method was applied in computing the correlation coefficients, and then a correction was made with the Sprearman-Brown Prophecy Formula.

For the American subgroups, the reliability ranged from 0.55 to 0.71 for $I+$, and from 0.36 to 0.48 for $I-$ subscale. For the Chinese subgroups, the reliability ranged from 0.51 to 0.72 for $I+$, and from 0.36 to 0.48 for $I-$ subscale. These reliabilities are significant beyond the 0.01 level and comparable with those reported by Crandall et al. (1965).

Procedure

The questionnaire was administered to both American and Chinese children on a group basis in individual classrooms by their teachers. The American subjects responded to the original version, and the Chinese children, the translated version. They were told not to spend too much time on any one item. They were advised not to write their names on the questionnaire. They were also informed that their responses were to be used in a study and would not be seen by anyone at the school, including the teachers. The administration of the questionnaire was completed within two months, starting at the same time in both countries.

Crandall et al. (1965), reported generally low correlations between $I+$ and $I-$ subscales. Similar relations were found in this study. The correlations ranged from 0.23 to 0.41 for American subgroups, and from 0.12 to 0.31 for Chinese subgroups. Two of the eight correlations did not reach a significance level. The obvious independence of the two subscale scores may mean, as suggested by Crandall et al. (1965), that assuming responsibility for successful intellectual-academic experiences may be different from assuming responsibility for failure experiences. It also raises some doubt about the use of the total I score. Consequently, the statistical analysis and comparisons were performed for $I+$ and $I-$ scores separately.

Results

Subscale scores were obtained for each subject. Group means and standard deviations were computed for different grade levels as well as for different cultures, and for boys and girls separately. Table 1 presents these descriptive statistics with respect to culture, grade, and sex for both $I+$ and $I-$ scores.

Comparisons of internality in success and failure situations

In comparison with the American children, Chinese children responded differently to success and failure events. American subjects obtained higher scores on the $I+$ than on the $I-$ subscale. The differences of the mean scores for the two subscales for sixth grade boys, sixth grade girls, eighth grade boys, and eighth grade girls were all significant beyond the 0.01 level ($t = 6.91$, 3.61, 2.80, 3.76 respectively). The opposite was true for the Chinese subjects who scored higher on the $I-$ than on the $I+$ subscale. The differences of the mean scores for the two subscales for sixth grade girls, eighth grade boys, and eighth grade girls all reached a significance level ($t = 3.50$, 2.84, 3.39, respectively; $p < 0.01$). The difference for sixth grade boys was in the same direction and approached a significance level ($t = 1.79$).

Comparisons of internality in relation to culture, grade, and sex

A $2 \times 2 \times 2$ analysis of variance, representing culture, grade and sex, was performed on scores of both subscales. A posterior comparison was made between American and Chinese children of the same grade and sex when the overall F on the main effect of culture was significant.

Differences in success situations

The analysis of variance showed that all the main effects reached a significance level: American children were more internal than Chinese children ($F(1,712) = 7.98$,

Table 1
Means and standard deviations for subscale scores of IAR for American and Chinese children.

Subscale	6th grade				8th grade			
	Boys ($N = 90$)		Girls ($N = 90$)		Boys ($N = 90$)		Girls ($N = 90$)	
	M	SD	M	SD	M	SD	M	SD
American subjects								
$I+$	13.06	2.42	13.01	2.34	12.13	2.75	12.12	2.35
$I-$	11.12	2.46	11.90	2.38	11.23	2.15	10.96	2.54
Chinese subjects								
$I+$	13.17	2.17	11.54	2.61	11.76	2.55	11.74	2.80
$I-$	13.67	1.79	12.57	1.97	12.67	2.10	12.78	2.01

$p < 0.01$); sixth graders were more internal than eighth graders ($F(1,712) = 16.35$, $p < 0.01$); and boys were more internal than girls ($F(1.172) = 5.11$; $p < 0.05$), in their beliefs in personal responsibility for successful outcomes. Interaction effects between grade and sex, between culture and sex, and among culture, grade, and sex were statistically significant ($F(1,712) = 4.84, 4.46, 4.46$, respectively, $p < 0.05$).

Differences in failure situations

The main effects of culture and grade were statistically significant. Contrary to the difference in $I+$ scores described above, the Chinese subjects were more internal than American subjects in their beliefs of personal control for failure events ($F(1,712) = 98.13$, $p < 0.01$). Sixth graders, again, expressed more internal beliefs in failure situations than eighth graders ($F(1,712) = 6.18$, $p < 0.05$). The difference between males and females was not significant. Interaction effects between culture and sex, and among culture, grade, and sex reached a significance level ($F(1,712) = 5.20$, $p < 0.05$; $F(1,712) = 12.06$, $p < 0.01$, respectively).

Cross-cultural comparisons for corresponding subgroups

Since the main purpose of this study was cross-cultural comparisons, and since the F ratio on the main effect of culture for both $I+$ and $I-$ scores were significant, further analyses were made to compare the mean scores between American and Chinese children of same grade and sex. Thus, the mean score of American sixth grade boys was compared with that of Chinese sixth grade boys, the mean score of American eighth grade girls was compared with that of Chinese eighth grade girls, and so forth. The results showed that, for successful experiences, the only significant difference was found in sixth grade females, with American girls more internal than Chinese girls ($t = 3.93$, $p < 0.01$). However, in failure situations, significant cross-cultural difference of the mean scores on $I-$ was found in every pair of the corresponding subgroups. Chinese sixth grade boys were more internal than American sixth grade boys ($t = 7.81$, $p < 0.01$); Chinese sixth grade girls were more internal than American sixth grade girls ($t = 2.05$, $p < 0.05$). Similarly, Chinese eighth grade males were more internal than their American counterparts ($t = 4.40$, $p < 0.01$), and Chinese eighth grade females were more internal than their American counterparts ($t = 5.09$, $p < 0.01$).

Discussion and Conclusion

The most salient finding was that children's beliefs in locus of control not only varied according to cultures but also according to situations. American children expressed a higher degree of internality in successful than in failure situations. On the contrary, Chinese children tended to assume personal responsibility more for failure than for success outcomes. This same tendency was reported separately by Crandall et al. (1965) and Wu (1975) in their studies within a single culture.

The same cultural difference in internality pattern emerged clearly once again when comparisons for $I+$ and $I-$ scores between the two cultures were performed. American children were more internal than Chinese children in their perceptions of responsibility for success events, while the opposite was true for failure events. Further analyses for comparisons of corresponding cultural subgroups of same sex and grade showed that it was only the American sixth grade girls who scored significantly higher on $I+$ subscale than their Chinese counterparts. On the other hand, every Chinese subgroup obtained a significantly higher mean score on the $I-$ subscale than its American corresponding subgroup. This pattern was consistent with a previous finding by Chandler et al. (1981) that Japanese subjects in comparison with those from other four countries were most internal in causal ascriptions for failures and the least internal for successes.

These differences may be examined from two aspects of cultural conditions. First, the socialization process in China (Taiwan) traditionally emphasizes the behavior of being humble in regarding one's own success or achievement, as the saying goes, 'Modesty is a great virtue'. In addition, as Hsu (1970) points out, American ways of life are individual-centered; the emphasis is placed upon the predilections of the individual. If an individual is successful, the success is his own, being attributed to his own abilities or efforts. This is in contrast to the emphasis the Chinese put upon an individual's appropriate place and behavior among his fellow men, a characteristic Hsu (1970) calls situation-centered. If an individual is successful, the success is attributed to and shared with those who are related to him. With this different orientation, we would expect American children to score higher on the $I+$ than $I-$ subscale as well as higher than Chinese children in internal control when responding to success items ($I+$).

Second, studies indicate that in comparison with American parents, Chinese parents, particularly mothers, are more affectionate, nurturant, accepting, and supportive toward their offsprings (Sollenberger 1968; Steward and Steward 1973). Furthermore, it was found that mothers' expression of affection was associated with their children's willingness to accept blame ($I-$), but did not influence the children's assumption of credit for success ($I+$) (Katkovsky et al. 1967). A supportive and nonthreatening attitude on the part of the parent seems likely to make the child feel secure enough to accept responsibility for the error or failure and thus promote his belief in internal control when the

outcomes are negative. In view of these findings, it seemed logical to expect Chinese children to score highger in $I-$ but not in $I+$ subscale.

Both American and Chinese sixth graders expressed a higher degree of internal control than eighth graders for both successful and failure outcomes. These findings do not support the results of an earlier study by Crandall et al. (1965). However, these investigators did find a drop of $I+$ scores from grades 10 to 12. The reasons they used to explain this decrease were that the imminence of graduation provoked uncertainties about future success and that the older children may have developed an increased sense of modesty, and thus lowered their $I+$ scores. A similar argument could be applied in the present study. As compared to sixth graders, eighth graders may face a bigger change in themselves as well as their environments. They have to make an adjustment in almost all aspects of their lives, physically, emotionally, and socially. Besides coping with their rapid body changes and social expectations, they are beginning to experience 'identity crisis' (Erikson 1968). All these factors may add up and cause eighth graders to feel uncertain about their own behavior and its consequences, tending in turn to decrease their beliefs in internal control.

As a whole, boys expressed a higher degree of internal control in positive situations, and this was mainly caused by sex difference in Chinese sixth grade children. There was no difference between sexes in negative situations, but there was an interaction effect between culture and sex. American sixth grade girls took more responsibility for failure than sixth grade boys. This finding supported previous studies by Dweck and Bush (1976) and by Crandall et al. (1965). In contrast, Chinese sixth grade boys were more internal for failure than sixth grade girls. No difference was found between males and females in eighth grade children from both countries. It appears that sex differences in perception of personal control varied with age and culture of the subjects. This inconsistency was not unique, as concluded by Dyal (1984) in his review of gender effects in the cross-cultural research on the locus of control construct, '... it is possible that there is an overall cross-cultural consistency for women to be somewhat more external; however, this fragile effect varies substantially (and capriciously) with particular culture and sample characteristics'. Much research remains to be done to clarify the existence and determinance of sex difference in internality.

In conclusion, American children tended to be more internal in success than failure situations, while the opposite was true for the Chinese subjects. Furthermore, Chinese children assumed more personal responsibility for failure events than American children as indicated by every pair of comparison between the corresponding cultural subgroups. Although the reverse tendency was found for success events, the cultural difference was not so striking that only the American sixth grade girls were more internal than their Chinese counterparts. Contrary to the previous findings, the sixth graders were found to be more internal than eighth graders from both countries for both successful and failure situations. Gender difference in taking personal responsibility was found to vary with culture and sex. Due to the relatively low reliabilities of IAR (even though comparable with those reported by other researchers), particularly for $I-$ subscale, the differences of mean scores presented and discussed above should be viewed with caution.

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Le questionnaire IAR (Intellectual Achievement Responsibility), développé par Crandall et al., a été administré à 720 enfants, 360 des Etats-Unis et 360 de Taiwan. Les sujets ont été répartis de manière égale selon leur niveau scolaire (6e et 8e année) et selon le sexe. Une analyse de variance $2\times2\times2$ (culture, niveau scolaire, sexe) a été effectuée séparément sur base des scores de la souséchelle des expériences de réussites ($I+$) et la souséchelle des expériences d'échecs ($I-$). Les résultats montrent que: (a) les enfants américains ont obtenu des scores $I+$ significativement plus élevés et $I-$ inférieurs que les enfants chinois; (b) les enfants de 6e année ont obtenu des scores significativement plus élevés que ceux de 8e année pour les souséchelles $I+$ et $I-$; (c) les garçons ont obtenu des scores significativement plus élevés que les filles pour $I+$, mais la différence de sexe n'était pas significative en ce qui concerne $I-$. L'on a également trouvé que les enfants américains étaient plus intériorisés dans des situations de réussites que dans des situations d'échecs, tandis que le contraire s'est avéré vrai pour les enfants chinois.