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## Expanding Depression Prevention Research With Children of Diverse Cultures

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### ABSTRACT

This is a commentary on the articles by [E. V. Cardemil, K. J. Reivich, and M. E. P. Seligman \(2002\)](#) and [D. L. Yu and M. E. P. Seligman \(2002\)](#) in this issue of *Prevention & Treatment*. Both articles evaluate the Penn Resiliency Program when administered to diverse samples of children. The first study focused on African American and Latino (primarily Puerto Rican) children and the second on Chinese schoolchildren in Beijing. Explanatory style was related to depressive symptoms for the Chinese sample, but not for the African American or Latino samples. The intervention produced a significant reduction in depressive symptoms for the Latino and Chinese samples but not for the African American group. The commentary suggests possible reasons for these discrepancies and highlights the exemplary elements of these benchmark studies.

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The University of Pennsylvania team led by Martin E. P. Seligman is one of the few groups attempting to carry out randomized trials designed to test depression prevention effects. This group has conducted one of the first four randomized trials specifically testing whether major depressive episodes can be prevented ([Muñoz, Le, Clarke, & Jaycox, in press](#); [Seligman, Schulman, DeRubeis, & Hollon, 1999](#)). As part of their research program they have also conducted studies designed to prevent depressive symptoms. The two articles published in this issue of *Prevention & Treatment* ([Cardemil, Reivich, & Seligman, 2002](#); [Yu & Seligman, 2002](#)) address the latter goal.

Seligman and his group base their cognitive-behavioral interventions on the hypothesis that pessimistic explanatory style, especially attributions for negative events, increases the risk for depression. The theory posits that individuals are more likely to develop serious

depressions if they give stable, internal, and global explanations for negative events. Their research group has conducted earlier studies with fifth and sixth graders and found that those who participate in their prevention program have significantly lower levels of depressive symptoms than controls up to 2 years of follow-up ([Gillham, Shatté, & Freres, 2000](#)). What is most impressive about the current articles is the extension of this line of work to new cultural groups. The Cardemil, Reivich, and Seligman studies included samples of Latino and African American children in the United States. The Yu and Seligman article addresses Chinese children in Mainland China (Beijing). Both articles are well described and executed masterfully. They therefore provide a wonderful glimpse into what the prevention field is likely to find as it begins to expand into other populations. The authors took great care in modifying the program's content to make it culturally appropriate and actually tested their theoretical assumptions, sometimes finding that the assumptions were not supported; for example, explanatory style did not mediate depressive symptoms in Latino or African American children, but it did in Chinese children.

A major aspect of these two articles is their focus on children. Because emotion regulation challenges increase during puberty and early adulthood, this is the critical period in which skills in this area must be developed. If they are not, they can lead to several public health problems. As adolescents and young adults confront more difficult life tasks as well as significant changes in their biological development, many of them find that their emotion regulation skills are inadequate to confront these challenges. During puberty, there are massive increases in problems with emotion regulation. These problems are usually manifested in increases in anxiety and depression, which can also lead to a number of health compromising behaviors and lifestyle changes, such as greater levels of substance abuse, multiple sexual partners during adolescence, teenage pregnancy, and suicide attempts ([Rodriguez, 1996](#)). Babies of depressed teens are, again, at higher risk, and thus, this vicious cycle begins again. If depression affects one's ability to function as a parent ([Hammen et al., 1990](#)), then children in these families will be at greater risk for mood regulation deficits themselves, unless they are offered interventions to prevent this crossgenerational cycle from occurring.

A strength of the Penn Resiliency Program (PRP), which was used in both articles, is that it is a school-based program. Given that the vast majority of children throughout the world go to school, the program has a high likelihood of dissemination, as demonstrated in these studies. School-based programs, particularly led by teachers, as in the Yu and Seligman study, may be more appropriate for low-income minorities who, for several reasons, historically underutilize mental health services ([Brown et al., 1995](#)). Therefore, easier access to these programs for the parents and guardians of at-risk children may increase service utilization in these populations. In the following sections, we focus on the outcomes of the PRP in both studies and the implications for expanding depression prevention research with children of diverse cultures.

## **The Cardemil, Reivich, and Seligman Study**

This study focuses on preventing depressive symptoms in African American and Latino fifth and sixth graders in Philadelphia. Cardemil et al. hypothesize that the PRP will produce both treatment and prevention effects. They define *treatment* effects as reductions in symptoms for those with initially high symptom scores and *prevention* effects as reducing the proportion of children who develop high symptom levels from among those with initially low symptoms. In brief, the investigators found significant overall beneficial effects for Latino children up to 6 months after they received the intervention, but they found no measurable effects for the African American children.

## ***Latino Cohort Outcomes***

A comparison of the experimental and control children demonstrates significant differences overall, showing that Latino children receiving the intervention have lower mean depression scores at post-, 3-month, and 6-month follow-up assessments. This is strong evidence for the effectiveness of the PRP in reducing depressive symptoms in Latino children. Treatment effects for initially high-symptom children were significant: Those children in the intervention had lower depressive scores at post-, 3-month, and 6-month assessments. Tests of the hypothesis that the PRP would prevent the development of depressive symptoms in children with initially low symptoms resulted in trends (significance levels less than .10) at post- and 6-month assessments.

A test of whether the intervention produced changes in explanatory style showed no differences in explanatory style between the intervention and control children. Thus, it appears that the intervention effects on Latino children were not due to changes in the main theorized mechanism. However, the investigators did find that two other cognitive measures (negative automatic thoughts and hopelessness) were significantly lower in the experimental group or showed a trend in the predicted direction at each of the assessment periods. The change in negative cognitions was a significant mediator of the program's effect on depressive symptoms at posttreatment, suggesting that depressogenic thoughts should be a primary focus for depression prevention programs with Latino children. For example, in a study of 304 adolescent girls, Mexican Americans were found to report more depressive symptoms and pessimistic cognitive patterns compared with girls from other ethnic backgrounds ([Joiner, Perez, Wagner, Berenson, & Marquina, 2001](#)).

## ***African American Cohort Outcomes***

The PRP did not show any significant effects on depressive symptoms for the African American group as a whole or for either those with initially high or initially low symptoms. Also, the PRP did not show an effect on explanatory style, negative cognitions, or hopelessness. A close look at the depression score patterns shows that the lack of significant differences is at least partly because of significant reductions in depression symptoms in the control condition. In fact, this pattern was strong enough so that at the 3-month follow-up assessment, the experimental children had significantly higher depression scores than the control children. African American controls did not maintain stable levels of depressive symptoms. In fact, they showed a marked, significant reduction in depressive symptoms scores compared with Latino controls. However, the initial level of depressive symptoms was low (8.5 on the Children's Depressive Inventory [CDI]), and the reduction (to 5.5) may not be clinically meaningful. This finding suggests that either something occurred that produced a true significant reduction in depression levels for the African American control children or that repeated assessment with these depression measures resulted in drops in scores in this sample of African American children.

## **The Yu and Seligman Study**

This study was a paragon of elegance. The exceedingly careful step-by-step investigation of depression in children of Mainland China can serve as an example for future studies in other countries as well as in the U.S. itself. This is a classic article.

The three key points made by this study are as follows:

1. There are high levels of depressive symptoms in Chinese children;
2. Pessimistic explanatory style is related to higher depressive symptoms in Chinese children; and
3. The PRP led to a reduction in symptoms in these children.

Yu and Seligman are cognizant of the potential issues about imposing European American concepts on the Chinese children. However, their careful analysis of the relationship between the depressive measures and indigenous variables such as school grades and parental and teacher ratings suggests that their measures have external validity. They carefully mapped the relationships among their depressive symptom measures and gender, age, socioeconomic status, family environment (including whether the child was an only child and characteristics of the child's family structure), and academic performance. They then proceeded to look at explanatory style: its stability, relationship to depressive symptoms (the stable and global dimensions, but not the internal dimension were significantly related), and whether the combination of pessimistic explanatory style and life events leads to higher depressive symptoms (it did in their study). Finally, Yu and Seligman confirmed the stability of depressive symptoms, which, as we saw in Cardemil et al.'s study of African American children, discussed earlier, is necessary to be able to detect differences when one introduces an intervention. Only then did Yu and Seligman conduct their intervention study.

After making structural, content-oriented, and theoretical changes to adapt the PRP to Chinese language and culture (de-emphasizing assertiveness skills and emphasizing cognitive elements), and providing 40 hr of training to school teachers to administer the intervention, Yu and Seligman tested the following three questions: (a) Do depressive symptoms decrease for children receiving the intervention? (Yes, they do.) (b) Does the intervention produce change in explanatory style? (It changes explanatory style for negative events.) (c) Do changes in explanatory style result in reduction in depressive symptoms? (Yes, they do.)

A reasonable question to ask is whether a reduction in symptoms should be considered a preventive effect. We conceptualize depressive symptoms as evidence of deficits in mood regulation. Reducing symptoms could be taken as evidence that participants have learned skills to regulate their mood better. The next logical step would be to see whether improvements in mood regulation lead to prevention of clinical depressive episodes. Whether a reduction in number of new depressive episodes that meet clinical criteria is necessary to demonstrate that onset of clinical depression has been prevented is an area of contention in the prevention field. Seligman and his colleagues have suggested that this emphasis on diagnoses in prevention research may be unnecessary ([Seligman, Schulman, DeRubeis, & Hollon, 1999](#)) and that a focus on "positive psychology" may be more constructive. We agree with the focus on promoting positive states of mood and health ([Muñoz, 1998](#)). But we also feel that showing that clinical episodes of depression can be prevented would be a major contribution to public health.

Current diagnostic categories have a strong arbitrary component, and it is likely that they will continue to be modified as our field progresses. Nevertheless, these categories are a strong aspect of the current scientific paradigm, and using them can help connect our work with other major research streams. As [Kuhn \(1962\)](#) has observed, "when examining normal science... we shall want finally to describe research as a strenuous and devoted attempt to force nature into the conceptual boxes supplied by professional education. Simultaneously, we shall wonder whether research could proceed without such boxes, whatever the element

of arbitrariness in their historic origins” (p. 5).

The prevention field encompasses both the prevention of symptoms (preventing an increase in symptom levels) and preventing clinical episodes (starting with a group in which no participant meets criteria for a clinical episode and showing that those assigned to the experimental condition develop significantly fewer cases). The latter has been done successfully with high school students by Gregory Clarke and his colleagues ([Clarke et al., 1995, 2001](#)).

However, these points in no way diminish the major contribution these studies have made in extending the work that Seligman and his collaborators have been conducting over the years. These studies set a good direction to pursue. They open the door to more work in these and other cultural groups. The studies raise the question of whether we may have been too timid in regard to applying methods that have been found promising in English-speaking European American populations in the U.S. to other groups. The Chinese study is perhaps the most clearly revolutionary of the two. It not only addresses another ethnic group, but it does so in its own language and in its own country, with little English language or European cultural influences. Yet the measures, the relationships between measures, and the outcomes parallel what has been found in the U.S.

The anthropologists Kluckhohn and Murray have pointed out that “every man is in certain respects: a. like all other men, b. like some other men, and c. like no other man” ([Sundberg, 1976, p. 140](#)). As we understand their point, there are universals in which all human beings are alike, subgroup differences that can be reliably found between groups of people, and individual differences in which each person is truly like no other human being. Part of what we will be learning as we pursue intervention studies, such as those provided by Cardemil, Yu, and Seligman, is which of the variables we study belong to which of these levels.

The Cardemil et al. and Yu and Seligman studies suggest that depressive symptoms are very similar across cultures (i.e., universal?). Their stability varies across groups (most stable for Latinos in the U.S. and Mainland Chinese children, least so for African American children). And, of course, we assume that there were major differences in the ways in which individual children responded to the measures, to the intervention, and to the factors that were related to depression. It is entirely possible, for example, that patterns of responses of specific Latino children may have been more similar to those of individual African American or Chinese children, than to those of other Latino children.

The Cardemil et al. and Yu and Seligman studies also suggest that explanatory style may play a different role in its relationship with depression and prevention efforts across cultural groups. Seligman and his colleagues have found supporting evidence for the role of explanatory style in a U.S. sample of children ([Jaycox, Reivich, Gillham, & Seligman, 1994](#)) and in their current studies with children from Mainland China ([Yu & Seligman, 2002](#)). However, evidence for a relationship between explanatory style and depression or for an effect of the PRP program on explanatory style in the low-income Latino or African American cohorts was not found.

## Unanswered Questions

Why did prevention effects show only trends? This was possibly due to a floor effect in these samples. In the work done by Clarke and colleagues ([Clarke et al., 1995, 2001](#)), selecting a sample of adolescents with high symptom levels has led to measurable and significant preventive effects. However, there are problems with targeting only these

children in school-based programs. If it becomes public knowledge that those with high depression levels are the only ones participating, then these programs could develop a stigma that might be counterproductive. One possibility would be to invite all who are interested, but analyze the effects for those defined at greatest risk a priori.

Several researchers have noted that Latinos in the U.S. belong to several identifiable subgroups. In the study by Cardemil and colleagues, the Latino children come from families of primarily Puerto Rican descent. The Hispanic HANES (Health and Nutrition Examination Survey) study found higher prevalence rates of adult depression in Puerto Ricans in the U.S., compared with Mexican Americans and Cuban Americans ([Moscicki, Rae, Regier, & Locke, 1987](#)). Given the higher prevalence rates in this Latino subgroup and studies demonstrating the role of parental depression on child functioning, one wonders whether Puerto Rican children might be at greater risk for depression than other Latino children. The relationship between explanatory style and depression should also be tested in other Latino groups, as should the potential preventive effects of the PRP.

We were excited by the methodology used in considering the correlation between a child's depressive symptoms and family environment in the China study. The three specific family variables studied were single versus multichild families, family structure, and family functioning. After accounting for the effect of parental education and family income, the results indicate a nonsignificant trend in which nonsingle children reported more depressive symptoms than single children. With regard to family structure, a higher frequency of depressive symptoms was reported in children from single-parent families as compared with those from nuclear families, or extended families. Children from divorced families reported more depressive symptoms than children whose parents were not divorced. For family functioning, children who reported less family cohesion, higher levels of conflict, and lower overall family functioning reported higher depressive scores. These results add to the literature on the importance of considering parents, guardians, and overall family environment in depression prevention research in children. An important consideration in future depression prevention research may be how to improve the familial environment.

Lower academic performance and conduct problems at school were also examined as correlates of depressive symptoms in children. Children with more depressive symptoms reported poorer academic achievement and more school conduct problems. There are similarities in these findings to the work of Sheppard Kellam and his colleagues (e.g., [Kellam & Rebok, 1992](#)). In their studies, helping ethnically diverse children performing poorly in school to do better seemed to have a beneficial impact on depressive symptoms. Studying the reciprocal effect of mood and school performance may yield practical intervention strategies in the future.

The authors make the point that there are a very large number of children in China. The population of Latin America is also very young. For example, those less than 18 years of age comprise over a third of the population of Argentina and Chile; over 40% of the population of Colombia, El Salvador, Mexico, Perú, and Venezuela; and over 50% of the population of Nicaragua. The total number of children in these countries alone approaches 100 million. In the 2000 census, 35.7% of Latinos in the U.S. (about 12.5 million out of 35 million total) were less than 18 years of age compared with 23.5% of non-Latino Whites ([U.S. Bureau of the Census, 2001](#)). School-based depression prevention programs in Asia and the Americas could have major long-term impact on the health of our world.

## **Hypotheses for Future Testing**

In which populations does explanatory style have a significant relationship with depressive

symptoms? In these studies, we found that explanatory style is related to depressive symptom scores in the Chinese sample but not in the Latino and African American samples. We wonder whether the Chinese sample was more similar to the European American samples in which this work has been done before: The children were recruited in a university school, which suggests they came from relatively well-educated families. (Was this the case?) We wonder, too, whether they differed along this socioeconomic status dimension from the Puerto Rican and African American children, who seemed to come from lower income and lower educational backgrounds. If so, it may be that the effect of explanatory style can only be detected when the individuals being studied have access to a basic level of resources. When basic individual needs are not being met, the effect of explanatory style may be overwhelmed by lack of basic resources.

In which populations does the PRP produce measurable reductions in depressive symptoms? In this case, these studies report significant differences between the experimental and control groups for the Chinese and Puerto Rican children but not in the African American sample. We noted with interest that the Chinese and Puerto Rican children had higher CDI scores at baseline (approximately 12) and the African American children had lower initial CDI scores (approximately 8). [Cardemil et al. \(2002\)](#) note that a score of 20 is considered a moderate-to-severe level of depression on the CDI, but they do not provide the mean score in nonclinical community samples. Nevertheless, it appears that all three samples had relatively low scores initially, which may have led to a floor effect. This effect was particularly strong in the African American children. The relatively minor changes in the African American control and experimental groups may not be interpretable, even if statistically significant. This highlights a point made above, namely that to find significant differences in preventive studies, we may need to work with samples with higher initial depression scores but not meeting criteria for clinical depression. The investigators may be able to estimate effect sizes for future trials by analyzing the pre-post scores of those children initially scoring one standard deviation above the community mean.

Is it explanatory style or total number of depressogenic cognitions that makes the difference? We found it intriguing that, even though explanatory style was not related to depression in the Puerto Rican sample, total number of negative automatic thoughts was related and that the latter were reduced by the intervention. We found a similar effect in the San Francisco Depression Prevention Research Project, with a sample of predominantly minority primary care adult patients ([Muñoz & Ying, 1993, chap. 15](#); [Muñoz, Ying, Bernal, Pérez-Stable, Sorensen, Hargreaves, Miranda, & Miller, 1995](#)). Perhaps explanatory style is a subset of depressogenic thinking, and its unique effect is only detectable in certain subgroups. This would suggest a stronger focus on reducing the frequency of depressive thinking more generally to obtain more generalizable depression prevention effects across populations.

## Conclusion

These studies are a significant contribution to the field of depression prevention research and to efforts to move toward a world without depression ([Muñoz, 2001](#)).

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