

Dosage-Related Changes in a Culturally-Responsive Prevention Program for Asian American Youth

Nolan Zane, PhD
Bart Aoki, PhD
Tamara Ho, BA
Lillian Huang, BA
Mike Jang, MA

SUMMARY. In an effort to provide more responsive modalities to treat and prevent alcohol and other drug (AOD) abuse in under-

Nolan Zane and Lillian Huang are affiliated with the Graduate School of Education, University of California, Santa Barbara, CA. Bart Aoki is affiliated with the Asian American Recovery Services, San Francisco, CA. Tamara Ho is affiliated with the Department of Psychology, California State University, Hayward. Mike Jang is affiliated with the Four Winds Research Corporation, San Francisco, CA.

Address correspondence to: Nolan Zane, Graduate School of Education, University of California, Santa Barbara, CA 93106-9490.

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served communities, intervention programs with an ethnic-specific focus have developed. However, there has been few empirical studies that examine the types of changes associated with participation in these programs. The present study examined the outcome changes associated with participation in the Competence Through Transitions (CTT) program, a prevention intervention specifically designed to serve the diverse needs of Asian American youth from five different Asian ethnic communities. The study identified aspects of the intervention that were related to outcome changes in order to better understand what accounts for the culturally responsive nature of this program. CTT participants were more knowledgeable about drugs and about the negative influences of drugs after completing the program during the school year. Also, there was a significant increase in school-based social comfort following participation in the program. For parents, there was a significant increase in school competence, but no significant change in their perception of family relations. CTT evinced much less effect on youth and family participants when the program was conducted in the summer in that no pre-post outcome changes were found for the summer-based intervention. The outcome differences between the two programs were found to be associated with specific types of *curriculum-based* dosage differences that were theoretically tied to those outcomes. The investigators discuss the ways in which the dosage differences between the school and summer programs may have contributed to the observed differences in outcomes. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: getinfo@haworth.com]

INTRODUCTION

The growing recognition of the need for culturally-responsive programs in the treatment and prevention of alcohol and other drug (AOD) abuse has led to a substantial increase of ethnically-specific interventions in ethnic minority communities (Bolek, Debro & Trimble, 1992; Catalano et al., 1993; Orlandi, 1992; Zane & Huh-Kim, 1994; Zane, Park, and Aoki, in press). As with other ethnic minorities, efforts to impact the Asian American communities have focused on creating programs with culturally-sensitive aspects that purportedly increase the effectiveness of the programs for this particular population (Kim, McLeod, & Shantzis, 1992; Zane & Huh-Kim, 1994). However, there has been a lack of empirical evidence on just how capable these programs are in effecting change in the particular communities for which they were designed; research has yet to show what specific aspects of these programs make them "culturally responsive" for Asian Americans. Studies are needed to not only test the

effectiveness of these programs, but this research would also provide the empirical base for systematically developing more culturally competent interventions. Therefore, the evaluations of such programs must investigate both the changes that occur to participants as well as the features of the intervention that are associated with those changes (Catalano et al.; Yen, 1992).

A number of factors undoubtedly can contribute to the culturally-responsive nature of an intervention. One important feature may be the organizational structure from which these interventions are implemented in the target communities. Uba (1994) delineates three means by which Asian Americans receive mental health services: (1) through mainstream facilities by generally trained personnel, (2) through mainstream facilities by specially trained personnel, and (3) through segregated facilities by specially trained personnel. Research has given some indication that ethnic-specific services provided by bicultural, bilingual personnel in community-based agencies will tend to be utilized by Asian American clients (Sue, Zane, & Young, 1994). This configuration of services appears to be effective because it allows for institutional flexibility in program planning, utilizes efficiently those therapists who are culturally sensitive to Asian Americans, increases the visibility of services to the community, and apparently decreases the stigma associated with seeking help (Kim et al., 1992; Uba; Zane and Sasao, 1992).

Kim et al. (1992) describe six types of program activities that have been employed in community-based prevention programs for Asian Americans. Many of these models are based on AOD intervention theory and have been implemented without any outcome evidence of their effectiveness (Zane, Park & Aoki, in press). For example, a case management model addresses the basic needs of the client, using referrals to both formal service agencies and informal support networks to develop a system of care for the family. Such an approach might be particularly helpful to recent refugee and immigrant clients who may not know how to access formal organizations to help them with the problems they are facing. The goal of case management is to encourage a collaborative effort in developing a system of care for both the child and the family, while teaching self-advocacy and assessing natural support networks. Family-oriented interventions are based on the central importance of the Asian American family system to the psychosocial functioning of individuals (Sue & Morishima, 1982). Traditional East Asian cultures often emphasize prioritizing family needs over individual ones, and the context of strong, extended family support networks might help to prevent AOD abuse from occurring. However, research shows that family cohesion can both be a protec-

tive device as well as a social stressor for Asian Americans (Zane & Sasao). In a similar vein, the mutual support model is based on the collectivist nature valued in East Asian cultures. This support group strategy encourages the sharing of common experiences and the development of constructive alternatives in coping with daily stressors and acculturation pressures among the group members. Programs working from an information deficit model emphasize providing skills and information to treat the adjustment problems of Asian individuals. In this approach, the prevention agency and the provider become teachers and sources of information. These programs capitalize on the value placed in East Asian cultures on education by framing the interventions in an educational context. They work to clarify the meaning and consequences of drug taking behavior and to lessen the stigma associated with help-seeking. Empowerment models foster personal self-sufficiency by supporting a community's efforts to develop its own resources and the personal capabilities of its residents. Prevention programs that follow this model focus on the participant's abilities to seek solutions to their own problem, thereby, decreasing the personal alienation and helplessness that may lead to AOD use and abuse. Finally, a cultural enrichment approach focuses on reinforcing the bicultural or monocultural identification of individuals. It is based on the assumption that a lack of or weakening of cultural identification, whether with Asian or mainstream cultures, may create or exacerbate adjustment problems for Asian American individuals. This prevention strategy attempts to shape culturally valued characteristics to enhance cultural identification as a protective factor against AOD use and abuse.

Other types of interventions appear to have the potential to be useful as prevention programs for Asian Americans, but, again, these approaches have not been empirically validated (Zane & Sasao). For example, social skills programs would focus on increasing the ability of Asian American youth to interact more effectively with others. However, the development of what are considered Western-oriented social skills, such as open self-expression and assertiveness, might cause intra-familial tensions for Asian Americans because these individualistic-oriented behaviors may conflict with the emphasis placed on saving face and avoiding confrontations within such families. Although such programs may be effective for mainstream youth, further research is necessary to investigate their usefulness in Asian American communities. Peer model interventions are based on the premise that certain types of peer relationships might lead to or discourage AOD abuse, and these programs attempt to foster new or different peer relationships in which nonuse norms prevail among the peer group members. Evaluations of this type of intervention for Asians would deter-

mine if this approach is an effective means of intervention or whether other social contexts, such as the family, would be more culturally appropriate (Kim et al., 1992).

An important consideration in any prevention intervention for Asian Americans is the extent to which the intervention can accommodate or be adapted to address the specific needs of different Asian American ethnic groups. Past research has consistently documented heterogeneity with respect to substance use/abuse patterns and human service needs (Zane & Huh-Kim; Yen, 1992). Recognizing and addressing this heterogeneity may be vitally important because it appears that certain groups have higher risk factors (Southeast Asian refugees, Koreans, and Filipinos) for AOD abuse and that these particular groups constitute the most rapidly growing populations among Asian Americans (Zane & Sasao). Moreover, previous program evaluations have indicated that certain types of prevention strategies may be more effective in different Asian American communities (Asian Youth Substance Abuse Project, 1993). Thus evaluations of programs for Asian American communities must always account for this ethnic variation in the outcome studies. The present study examined the effectiveness of a prevention program specifically designed to serve the diverse needs of Asian American youth from five different Asian ethnic communities. The primary purpose of the study was to identify aspects of the intervention that were related to outcome changes in order to better account for the culturally responsive nature of this program.

METHOD

Prevention Program and Participants

Competence Through Transitions (CTT) is a substance abuse prevention program designed to increase the resiliency and protective factors of high risk Asian youth, ages 10 to 15, and their families as they approach and enter critical transitional periods. In order to address the ethnic diversity among the San Francisco Asian American communities, a network of seven community-based organizations are involved in the implementation of the CTT program. These agencies have a long history of collaboration, and have developed a strong, viable consortium which forms the stable basis for the CTT program. One agency served as the centralized administrative agent. It coordinates the prevention activities among the other agencies, conducts strategic planning and data gathering, and provides staff development training. Another agency has as its primary responsibility

ity the provision of technical assistance to prevention staff in Asian American substance abuse issues and treatment and serves as the primary referral for treatment services when clients' problems have progressed to a point where a preventive approach is deemed inappropriate. The other five agencies are responsible for conducting the prevention interventions with five different Asian American communities: Chinese, Filipino, Japanese, Korean, and Vietnamese. Each agency conducts two prevention interventions, one during the school year and one during the summer.

The project's approach involves a combination of skill building and activity oriented interventions aimed at strengthening the ability of high risk Asian youths and families to more successfully accomplish specific school and cultural transitions. It attempts to involve Asian parents by appealing to their desire for their children to do well academically and by providing direct support for their increased effectiveness as parents in relation to school personnel and activities. Based at ethnic-specific youth centers, the project also emphasizes the importance of creating and strengthening cultural and community bonds for high risk youths. CTT emphasizes these areas because for Asian youths in the United States, developmental and cultural transitions are extremely critical. Asian youth and families are frequently ill-equipped to cope with the socio-developmental changes associated with these transitions as they occur in the context of American culture. Traditional Asian child-rearing practices emphasize academic performance rather than social involvement. Many Asian parents encounter difficulty with the need to balance flexibility with clear limit-setting to effectively parent the growing bicultural adolescent. With increasingly complex demands placed upon them, Asian youth often experience a sense of confusion and alienation from family members while at the same time lacking a network of supportive peers and mentors outside the home. During times of transition, crises arise that can lead to increasingly problematic and extreme behavior as the Asian youth and their family members are taxed beyond their limits.

Because parents and other family members will continue to play a significant role throughout the youth's life, the involvement and empowerment of all family members are particularly critical to the success of any prevention effort for Asians. Thus the project attempts to build on the importance of family and the strength inherent in the Asian parents' desire for the youth's success by directly involving and strengthening the parents' role in school settings. By supporting parental competence as well as embedding workshops and recreational activities in ethnic-specific youth and community centers in the neighborhoods, the competency of the youth are strengthened in a culturally affirming and enduring way.

CTT's overall goal is to increase the resiliency and protective factors of high risk Asian youth and their parents as the youth transition from elementary to middle school and from middle school to high school in order to reduce the likelihood that these youth will engage in alcohol, tobacco, and other drug (ATOD) use. At the individual level, the project's specific objectives are to (a) increase knowledge of critical youth health issues (drugs and HIV/AIDS), (b) enhance pro-social skills, and (c) increase cultural competence. At the family level, interventions are designed to enhance family relations among the youth and their parents. Finally, at the school level, CTT aims to generate more positive attitudes and social comfort for youth in school and to increase the parents' sense of efficacy in dealing with school-related issues and school personnel.

Prospective participants are designated as high-risk and eligible for participation in the program if they meet one or more of the following criteria: below C average; declining grades over two or more reporting periods; unexcused absence or lateness for three or more days per school year; parent-counselor conference for attendance or lateness problems; warning citation; individual detention; unsatisfactory citizenship grade; misconduct in class by teacher observation; parent-counselor conference for misconduct in class; suspension; pattern of regular tobacco use; signs of being under the influence of alcohol; initiation of other drugs; parental alcohol use (signs of being under the influence at least twice a month); parental use of other drugs.

The CTT approach consists of the following five intervention components, each tailored both developmentally and culturally to the specific needs of the acculturated and newcomer Asian youth participants: (a) Health Issues (gateway drugs and HIV/AIDS), (b) Transitional Social Competence, (c) Multicultural Competence, (d) Intergenerational Family Competence, and (e) School/Institutional Competence. Each component involves a series of workshops conducted by bilingual/bicultural health educators. The workshops are integrated into the activities of youth/community centers or are held in school settings. In order to give each participant individual attention, the groups are kept to a small, manageable number of 10 to 15 participants.

The Health Issues component is comprised of three 45-minute participatory sessions on gateway drugs and two 45-minute sessions on HIV/AIDS. The drug knowledge sessions address the myths and facts associated with gateway drugs, the process of addiction and related risk factors, and refusal skills. The HIV sessions focus on the myths and facts of HIV, the transmission process, high risk behaviors, protection against the virus, and how to relate to others with HIV or AIDS. The Transitional

Social Competence component is designed to enhance the social competence of youth in school settings, and it is comprised of four 45-minute skill building sessions. The topics include self-awareness and personal goals, problem solving, effective communication, and dealing with stress. The Multicultural Competence component is designed to generate greater cultural appreciation and pride among youth, and is comprised of three 45-minute participatory sessions focusing on cultural awareness, understanding and appreciating other cultures, and maximizing cultural strengths. The intergenerational Family Competence component aims to improve youth-parent relationships, and consists of interventions for youth and their parents. For the youth, four semi-structured meetings are organized around specific cultural events and family outings. Youth discussions primarily focus on familial values and intergenerational communication. Parent participants are involved in a series of small group (10 to 15 participants) workshops. Topics include familial values, limit setting and structure, encouragement, and intergenerational communication. Parent groups and multifamily activities are also supplemented on a selective basis with individual family meetings aimed at addressing needs specific to a particular family. The School/Institutional Competence component consists of four 1-hour parental meetings, a 45-minute youth session, and an on-site familial school orientation. The youth participate in a 45-minute session aimed at decreasing the youths' anxiety regarding attending a new school. The parent program focuses on improving a parent's effectiveness in dealing with school-related problems and institutional matters. Topics for the parent workshops include understanding the new school environment, parental rights and responsibilities, identifying and accessing community resources, and self advocacy and communication skills. In addition to these components, the youth participate in recreational activities and receive academic tutoring.

CTT conducted two prevention interventions, one during the 1994-95 school year and the other during the summer months of 1995. Pretest and posttest data were collected on 94 of the 105 registered youth in the school programs and on 51 of the 57 registered youth in the summer programs. Table 1 shows the demographic characteristics of the youth participants for the total CTT program and its member agencies. The program had mostly male participants, but two agencies, the Vietnamese and Japanese organizations, had substantial female participation. Consistent with CTT's emphasis, the program focused on intervening with preadolescent youth. With the exception of the Pan-Asian focus of the Japanese community agency, the CTT agencies tended to serve one particular Asian ethnic group. Finally, CTT served both newcomer and acculturated Asian youth,

but there was great variation among the agencies in terms of this participant characteristic.

Evaluation Design

As a part of the overall program evaluation of CTT, a pre-post design was implemented to examine the changes associated with participation in the youth and family interventions. Pre- and post-program assessments were made to determine if the interventions had achieved their specific objectives as indicated above. The intervention groups were pretested during the session prior to the implementation of the prevention activities and posttested after the final activity had been implemented. A process evaluation of how the curricula were implemented was also conducted to supplement the pre-post outcome study. Thirty percent of each agency's activities were randomly selected and observed by evaluation staff. The evaluators observed the extent to which curricula were implemented and documented any staff-related problems (e.g., lack of skill in group facilitation) or strengths (e.g., good rapport building skills) or external factors (e.g., pressure from agency administrators to change the program to better meet the service needs of that agency) that may have affected the implementation. Project staff were also interviewed about their perceptions of the participants and the activities.

Measures

Table 2 lists the objective-related outcome measures, a brief description, and their psychometric properties. Previous evaluation studies of these measures have found them to be reliable with adequate concurrent validity (Zane, 1992; Zane & Chen, 1994). For example, as in the previous two years of the program, the measures were reliable with internal consistency alphas ranging from .65 to .93. The measures were translated and back translated. Discrepancies between the two forms were resolved by a three-person committee of bilingual experts. The youth and parent measures were available in English, Chinese, Korean, and Vietnamese, and were administered in the participant's primary language by the evaluation staff. Monolingual parents who were not literate were assisted by translators who had been trained in the assessment procedures.

FINDINGS

Program Dosage

Table 3 shows the average dosage (in minutes) of each major prevention activity that was received by youth in the school-year and summer

TABLE 1. CTT Cycle 3 Youth Demographics

	Overall Program (N = 145) % (N)	CYC (N = 31) % (N)	JCYC (N = 21) % (N)	KCI (N = 24) % (N)	VYDC (N = 26) % (N)	WB (N = 43) % (N)
Program						
School	65% (94)	81% (25)	29% (06)	62% (15)	50% (13)	81% (35)
Summer	35% (51)	19% (06)	71% (15)	38% (09)	50% (13)	19% (08)
Sex						
Male	61% (88)	97% (30)	29% (06)	62% (15)	38% (10)	63% (27)
Female	39% (57)	3% (01)	71% (15)	38% (09)	62% (16)	37% (16)
Age						
Preadolescent (10-12)	67% (97)	39% (12)	71% (15)	83% (20)	46% (12)	88% (38)
Midadolescent (13-15)	33% (48)	61% (19)	29% (06)	17% (04)	54% (14)	12% (05)
Ethnicity						
Filipino	30% (43)				15% (04)	100% (43)
Chinese	29% (42)	94% (29)	43% (09)			
Korean	15% (22)			92% (22)		
Chinese-Vietnamese	13% (19)	6% (02)	14% (03)	4% (01)	50% (13)	
Vietnamese	7% (10)			4% (01)	35% (09)	
Asian-Mixed	4% (06)		29% (06)			
Japanese	1% (01)		5% (01)			
African-American	1% (01)		5% (01)			
Other	1% (01)		5% (01)			
Acculturation Status						
Acculturated	53% (77)	0% (0)	100% (21)	96% (23)	50% (13)	46% (20)
Newcomer	47% (68)	100% (31)		4% (01)	50% (13)	54% (23)
Place of Birth						
Born in U.S.	34% (50)	0% (0)	95% (20)	79% (19)	19% (05)	14% (06)
Born outside of U.S.	66% (95)	100% (31)	5% (01)	21% (05)	81% (21)	86% (37)

CYC (Chinatown Youth Center); JCYC (Japanese Community Youth Council); KCI (Korean Center Incorporated); VYDC (Vietnamese Youth Development Center); WB (West Bay Filipino Multi-Service Corporation)

TABLE 2. Characteristics of Intermediate Outcome Measures

Domain	Instrument	Measure	Reliability M = avg. alpha R = range	Stand. for Population
Health Issues	Health Survey	Drug & HIV Knowledge	N/A	Yes
	Substance Use Inventory	Drug initiation? Use in past 30 days?	N/A	Yes
Social Competence	Personal Risk Behaviors Scale	School: Past 3 months? Summer: Past month?	M = .90 R = .87 to .93	Yes
	Refusal Behaviors to Drugs & Peer Pressure Measure	How likely to be influenced by peers/family to use drugs and engage in negative behaviors?	M = .84 R = .83 to .86	Yes
Cultural Competence	Cultural Appreciation Measure (Acculturated)	How much attachment and appreciation does youth have for his ethnic culture?	M = .84 R = .79 to .92	Yes
	Cultural Pride Measure (Newcomers)	How much attachment and appreciation does youth have for his ethnic culture?	M = .75 R = .68 to .86	Yes

TABLE 2 (continued)

Domain	Instrument	Measure	Reliability M = avg. alpha R = range	Stand. for Population
Family Competence	Youth-Parent Relations Measure (Youth)	How supportive is family? Frequency of pos. and neg. parental interactions.	M = .85 R = .87 to .93	Yes
	Youth-Parent Relations Measure (Parents)	How supportive is family? Frequency of pos. and neg. youth interactions.	M = .77 R = .65 to .88	Yes
School Competence	School-based Social Comfort Scale	How often does youth feel anxious in social & school situations?	M = .88 R = .82 to .92	Yes
	School Competence Measure (Parents)	How effective does parent feel in school situations?	M = .78 R = .72 to .83	Yes

TABLE 3. Total and Curriculum-Based Dosage Comparisons Between the School and Summer Programs

Activity	Total Dosage			Curriculum-based Dosage		
	Mean	Std. Dev.	t	Mean	Std. Dev.	t
Drugs & HIV						
School	188.51	111.32	-6.59***	182.60	107.46	-6.01***
Summer	353.52	190.58		335.30	198.76	
Social Competence						
School	352.12	204.06	-3.53**	304.30	160.53	0.42
Summer	512.16	341.52		292.45	164.46	
Cultural Competence						
School	257.23	130.71	.93	127.66	68.18	-2.04
Summer	235.88	134.60		154.41	87.11	
Family Competence						
School	60.10	102.04	1.51	41.80	69.90	4.05***
Summer	35.59	75.30		1.77	12.60	
School Competence						
School	163.93	66.79	1.61	147.81	55.81	6.79***
Summer	145.49	64.20		90.59	30.29	
Recreation						
School	1283.46	1311.63	-8.50***	—	—	—
Summer	4407.47	617.17		—	—	
Tutoring						
School	545.27	1170.13	-.64	—	—	—
Summer	669.70	1033.41		—	—	

Note: School N = 94, Summer N = 51.

p < .01, *p < .001 (2-tail tests).

Numbers refer to minutes of programming.

programs in Year 3. It is evident that certain activities were given more emphasis in the programs. For school-year programs, social and cultural competence interventions were provided at greater dosages compared with drug knowledge training and school competence interventions. Family competence was provided at the lowest level of dosage. As expected, the non-curriculum activities, recreation and tutoring had the highest level of dosage. A similar pattern of dosage was found for the summer programs

with social and cultural competence having the higher levels of dosage. Drug knowledge training was also provided at a high dosage level, but much of this increase resulted from implementation of a supplemental HIV/AIDS education program in the summer months. As indicated in Table 3, school year and summer programs differed in dosage with respect to a number of prevention activities. Compared with the summer program, the school-year program had lower dosages in drug knowledge training, social competence, and recreation. Most of the difference in drug knowledge programming can be attributed to a funding artifact. Additional HIV/AIDS workshops were introduced by CTT in the summer due to the project's receipt of a supplemental HIV/AIDS grant. The other differences in activity dosage most likely reflect actual program variations in programming. It should be noted that the dosage levels reported here refer to the total time provided to each youth that was considered by staff to address a certain intervention area. Both curriculum and non-curriculum based intervention are included in these totals. When only curriculum-based programming is considered, differences between programs are even more marked. These differences will be presented and discussed in a subsequent section of the results.

Pre-Post Intervention Changes

The four ethnic-specific and one Pan-Asian programs of CTT completed their Year 3 cycles in September 1995. Each program conducted two prevention interventions, one during the 1994-1995 school year and the other during the summer months of 1995. Pretest and posttest data were collected on 94 of the 105 registered youth in the school programs and on 51 of 57 registered youth in the summer programs. The attrition rates (10.4% for school and 10.5% for summer) were not substantial, and comparable to the attrition found in Year 2 (9.4%). Analyses were conducted on the intermediate objective-related outcome measures to examine changes for the CTT youth following the school-year and summer programs.

School programs. Table 4 shows the pre-post mean comparisons of the various intermediate outcome measures for the school programs. A significant change was found in the youth's knowledge about drugs. Participants were more knowledgeable about drugs and about the negative influences of drugs after completing the CTT program. Also, there was a significant increase in school-based social comfort following participation in the program. No significant changes were found for cultural pride, cultural appreciation, personal risk behaviors, and relationships with one's parents. There was a significant decrease in refusal behaviors (to drugs). With respect to personal risk behaviors and drug use, significant pre-post

TABLE 4. Pre- and Posttest Comparisons on Intermediate Outcomes for School Program

Domain	Pretest		Posttest		df	t
	M	SD	M	SD		
Health Issues						
Drug & HIV Knowledge	16.79	3.00	18.48	3.27	93	-5.16***
Substance Use Inventory ^A						
Initiation of Cigarettes	1.83	.378	1.74	.438	93	2.61*
Initiation of Alcohol	1.73	.444	1.67	.473	93	1.51
Initiation of Other Drugs	0.23	.725	0.13	.477	93	1.41
Cigarette Use (past mo.)	1.32	1.03	1.29	.863	93	.46
Alcohol Use (past mo.)	1.19	.422	1.18	.463	93	.23
Other Drug Use (past mo.)	1.07	.253	1.01	.082	93	2.09*
Social Competence						
Personal Risk Behaviors ^B	61.14	6.91	60.99	7.44	93	.26
Refusal Behaviors to Drugs & Peer Pressure	34.47	5.35	33.39	5.58	93	2.49*
Cultural Competence						
Cultural Appreciation (Acculturated youth)	27.76	3.97	26.22	4.43	40	1.70
Cultural Pride (Newcomer Youth)	23.00	3.66	22.64	3.36	52	.68
Family Competence						
Youth-Parent Relations (Youth)	56.66	10.19	55.61	10.79	93	1.56
Youth-Parent Relations (Parents)	59.50	6.43	59.82	4.09	27	-.33
School Competence						
School-based Social Comfort (Youth)	50.29	11.56	54.49	10.69	93	-4.03***
School Competence (Parents)	27.03	6.98	30.60	6.90	27	-3.15**

Note: * $p < .05$, ** $p < .01$, *** $p < .001$ (2-tail tests).

Higher numbers refer to a greater level of that variable, except as noted below:

^A Substance use initiation: 1 = used; 2 = never used.

Substance use during past month: 1 = no use; a higher number indicates more frequent use.

^B Personal Risk Behaviors Scale: A lower number indicates higher risk.

change was found for the initiation of cigarette smoking and for the frequency of other drug use (not cigarette or alcohol use) in the past month; there was a greater initiation of smoking but less other drug use following participation in the program. For parents, there was a significant increase in school competence, but no significant change in their perception of family relations.

The pattern of changes found in the intermediate outcome data is somewhat consistent with the programming emphases observed in the CTT school-year programs. As shown in Table 3, the greatest dosage of *curric-*

ulum-based interventions received by participants involved interventions focused on social or school competence ($M = 452.11$ minutes) followed by drug knowledge training ($M = 182.60$ minutes) whereas relatively less programming was done in the areas of cultural competence and family issues ($M = 127.66$ and 41.80 minutes, respectively). This difference in dosage may partially explain why positive effects were found for drug knowledge/awareness and for school-based social comfort but not for youth-parent relations or cultural appreciation and cultural pride. With respect to the cultural competence measures, ceiling effects may have occurred because youth reported high levels of pride and appreciation of their ethnic cultural background at pretest. Considered from this context, the program appeared to maintain cultural pride during a developmental period in which many youth tend to reject or question their cultural heritage. The increase in initiating cigarette smoking may be due to more youth experimenting during this developmental period, as this experimenting effect has been found for drug prevention programs that increase youths' knowledge and awareness of drugs. It is also possible that the decrease in refusal behaviors may reflect this greater tendency to experiment with cigarettes. The decrease in the frequency of other drug use was most likely the result of usage reduction in only a very small number of youth because the mean use levels were already quite low at pretest.

Summer programs. Pre-post changes on the intermediate outcomes measures for the summer CTT programs are displayed in Table 5. Only one significant outcome change was observed, namely that youth participants reported less use of drugs other than alcohol or nicotine at the posttest. Again, as in the school-year programs, the very low usage levels at pretest indicate that this change in substance use most likely resulted from a reduction by only a very small number of youth. The lack of changes in the summer program raises the possibility that the summer participants may have been at less risk than the school participants, in which case the former group's level of functioning on many of the competence-based measures may have been already too high (or too low on the risk-based measures) for the program to appreciably affect. Comparisons of the two intervention groups on pretest functioning do not support this hypothesis as few differences were found between the groups. The differences that were found suggest that the summer youth participants were at slightly higher risk. Compared with the school-year participants, summer youth were less knowledgeable about drugs (summer $M = .70$ correct, $SD = .12$; school $M = .78$ correct, $SD = .13$), $t(143) = 3.59$, $p < .001$, and reported poorer family relations (summer $M = 53.29$, $SD = 8.78$; school $M = 56.66$, $SD = 10.18$), $t(143) = -1.99$, $p < .05$. Also, the summer group was rated by the preven-

TABLE 5. Pre- and Posttest Comparisons on Intermediate Outcomes for Summer Program

Domain	Pretest		Posttest		df	t
	M	SD	M	SD		
Health Issues						
Drug Knowledge	11.67	1.89	11.20	2.57	50	1.64
Substance Use Inventory ^A						
Initiation of Cigarettes	1.88	.328	1.86	.351	49	.57
Initiation of Alcohol	1.66	.479	1.66	.479	49	.00
Initiation of Other Drugs	2.50	1.51	1.88	1.12	7	1.49
Cigarette Use (past mo.)	1.16	.784	1.18	.793	50	-1.00
Alcohol Use (past mo.)	1.17	.385	1.22	.461	50	-.70
Other Drug Use (past mo.)	1.08	.214	1.02	.065	49	2.19*
Social Competence						
Personal Risk Behaviors ^B	60.41	7.77	60.78	7.78	50	-.45
Refusal Behaviors to Drugs & Peer Pressure	33.50	5.29	33.18	5.30	50	.66
Cultural Competence						
Cultural Appreciation (Acculturated youth)	25.56	4.18	25.20	5.27	33	.52
Cultural Pride (Newcomer Youth)	23.71	3.50	22.79	5.80	13	.69
Family Competence						
Youth-Parent Relations (Youth)	53.29	8.78	53.41	8.77	50	-.12
Youth-Parent Relations (Parents)	57.67	5.44	60.73	6.00	14	-2.03
School Competence						
School-based Social Comfort (Youth)	51.72	9.50	51.37	11.86	50	.35
School Competence (Parents)	27.93	7.98	29.47	7.06	14	-.88

Note: * $p < .05$ (2-tail tests).

Higher numbers refer to a greater level of that variable, except as noted below:

^A Substance use initiation: 1 = used; 2 = never used.

Substance use during past month: 1 = no use; a higher number indicates more frequent use.

^B Personal Risk Behaviors Scale: A lower number indicates higher risk.

tion staff as having more high risk characteristics at intake (summer $M = 2.63$, $SD = 1.76$; school $M = 1.81$, $SD = 1.35$), $t(143) = 3.14$, $p < .01$.

Process Findings

Qualitative observations indicated that there was a great deal of variance across the five agencies regarding curricula implementation. These observations were generally corroborated by staff interviews that were conducted at the end of the school program by evaluation staff. Two agencies attempted to strictly adhere to the outlined curriculum, covering

all of the key points and implementing the stated activities and role plays. Observations, however, revealed that in some of the sessions youth management problems prevented staff from implementing the full curriculum module. Two other agencies seemed to focus on relaying the general themes of the individual curriculum modules to their participants. These two agencies generally implemented about half of the listed activities. This strategy allowed the groups to go more in depth in one or two chosen interventions as opposed to briefly touching on a number of activities. The remaining agency tended to use the curriculum as a listing of possible discussion topics that could be used in a general discussion format. This strategy appeared to foster group retainment and bonding, but may have been less effective at reaching the intermediate outcome areas targeted for change.

DISCUSSION

CTT participants were more knowledgeable about drugs and about the negative influences of drugs after completing the CTT program. Also, there was a significant increase in school-based social comfort following participation in the program. No significant changes were found for cultural pride, cultural appreciation, personal risk behaviors, and relationships with one's parents. There was a significant decrease in refusal behaviors (to drugs). With respect to personal risk behaviors and drug use, significant pre-post change was found for the initiation of cigarette smoking and for the frequency of other drug use (not cigarette or alcohol use) in the past month; there was a greater initiation of smoking but less other drug use following participation in the program. For parents, there was a significant increase in school competence, but no significant change in their perception of family relations. CTT evinced much less effect on youth participants when programs were conducted in the summer. A number of explanations can be considered on how dosage differences could have mitigated the effect of the summer program. First, the summer program actually placed less emphasis on curriculum programming in relation to non-curriculum activities, particularly recreation. The summer program had more than 3.5 times the amount of recreational activity compared with the school-year program. From this perspective, summer youth received relatively lower dosages of prevention activities designed to specifically change behaviors and attitudes. Second, the greater emphasis on recreation may reflect the fact that in the summer, many youth are not oriented to the school-oriented curricula of CTT and, consequently, may be less responsive to the prevention interventions. Third, it is also possible that

with school not being in session, the summer participants did not have an adequate opportunity to use and practice the social skills and refusal behaviors in critical situations that are more often found in the school settings. These possibilities strongly suggest that the school-based curricula of the CTT program may have required more modification to accommodate situational and youth attitudinal changes that often occur during the summer months. CTT was originally conceived and designed to impact school adjustment which would then serve as a protective factor against drug involvement. Most of its curricula were designed to focus on school-related issues. Dosage data suggests that the summer programs were more recreation-oriented and this combined with the possibly "non-school" attitudes of the youth and the lack of the school milieu to serve as a relevant learning environment may have mitigated the effect of CTT during the summer. The CTT experience strongly suggests that school based curricula must be significantly modified to better fit the social conditions of the summer months when such interventions are implemented outside of the school year.

The positive effects of CTT's school program relative to its summer interventions are only suggestive in view of the lack of a control group in the outcome study. It is possible that maturation and history influences instead of the program may have accounted for these changes especially given the differences in program duration and time of administration between the school and summer programs. However, the outcome differences between the two programs were found to be associated with specific types of *curriculum-based dosage* differences that were theoretically tied to those outcomes (e.g., family dosage differences were related to program differences in parent sense of school competence). It appears that school program effects are a more parsimonious explanation of this pattern than either maturation or history effects.

In examining the relationship between dosage and outcomes, it appears that the distinction between curriculum based training and non-curriculum interventions is a useful one. In CTT, more interpretable differences between the summer and school programs were observed when curriculum based exposure rather than total minutes spent on a particular intervention was used. Qualitative observations indicate that there was variance in how the prevention interventions were implemented. This variance would become even more problematic for effective implementation when the curricula were not used. The school based program showed more effects on intermediate outcomes and this may be partially due to the fact that the school based program had relatively more curriculum based programming relative to non-curriculum based programming.

Finally, it appears that in consortium based projects, such as CTT, the variability among agencies in implementation becomes a critical program challenge. Qualitative observations indicated that there was a great deal of variance across the five agencies regarding curricula implementation. Individual agencies should vary the implementation to fit the specific needs of the targeted youth groups, and this is especially true for Asian American communities in which there exists great heterogeneity among the ethnic specific populations. On the other hand, significant variation in the implementation of the intervention activities can result in muted impact because the programs may not be having similar effects due to the variance in how they implement the interventions. It would be informative for future evaluation efforts to systematically examine how implementation variance is related to intermediate and ultimate outcomes. In this manner, evaluations of purportedly culturally-responsive programs such as CTT can be more definitive about which aspects of the program actually are associated with the desired outcome changes.

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