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Implementation of the Secondary 3 Program of Project P.A.T.H.S.: observations based on the co-walker scheme

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Abstract

The present study was conducted to explore the implementation quality of the Secondary 3 Program of the Tier 1 Program of Project P.A.T.H.S. (Positive Adolescent Training through Holistic Social Programmes) in the third year of the Full Implementation Phase. Classroom observations of 182 units in 129 schools were conducted. Results showed that the overall level of program adherence was 73.9%. Thirteen aspects concerning program delivery were significantly correlated. Multiple regression analyses revealed that overall implementation quality was significantly predicted by student participation and involvement, strategies to enhance student motivation, use of positive and supportive feedback, degree of achievement of the objectives, and lesson preparation. Success of implementation was significantly predicted by student participation and involvement, classroom control, use of positive and supportive feedback, opportunity for reflection, degree of achievement of the objectives and time management. The present findings generally suggest that the implementation quality of Project P.A.T.H.S. was high.

Keywords: Chinese adolescents; development; process evaluation; Project P.A.T.H.S.; school.

Introduction

A survey of the literature shows that an increasing emphasis has been placed on adopting positive youth development approach to promote psychological well-being among adolescents (1, 2). Based on an extensive review of positive youth development programs, Catalano et al. (3) found that only 25 programs were successful in terms of positive changes in the developmental outcomes. The low success rate might be related to the variation in the implementation process in different contexts and settings, and thereby challenging the validity of the intervention. The failure to implement the program as planned, commonly known as a "Type III error", does not only give us an inaccurate and unclear picture of the findings, but also poses a potential threat to claim the observed changes are attributed to the treatment effects (4–6). To ensure the intervention is effective, it is critical to examine whether the program is implemented as intended.

Process evaluation is important in order to understand "why" an intervention works successfully and "how" it can be delivered, modified and replicated in a variety of contexts (5, 7–9). Linnan and Steckler (10) proposed a framework for the development of systematic and comprehensive evaluation plans. Five major components are suggested when assessing program implementation: context, reach, dose delivered, dose received and fidelity of intervention delivered. *Context* refers to the setting or condition that affects the implementation of the intervention. *Reach* defines as the proportion of the intended audience who participated in the intervention. *Dose delivered* assesses the extent of the intended intervention that was actually delivered to the target audience. *Dose received* is the proportion of the intended audience that actively engaged and satisfied with the intervention activities. *Fidelity* is the quality of the intervention implementation that was delivered in the intended manner.

Program fidelity is essential if we claim an intervention as a truly successful one. Dusenbury et al. (5) noted that lack of fidelity is one of the salient factors for the failure of the intervention. In addition, based on the results of meta-analyses, the variation of program effect size depends substantially upon the degree of program fidelity (11, 12). Research showed that interventions are only effective when they are implemented with high levels of fidelity (13–15). Dane and Schneider (16) further described four key components of program fidelity: (a) *adherence*, i.e., how well the major components of the program are implemented according to stated objectives; (b) *exposure*, i.e., the extent to which the program is actually delivered to participants; (c) *quality of program delivery,* i.e., the extent to which the program is delivered as originally planned; (d) *participant responsiveness,* i.e., the degree to which participants actively engage in a program or using the recommended resources. Fagan et al. (17) contended that identifying program components for an effective program being implemented in different locales would "bridge" the gap between research and practice.

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Although program fidelity is considered as a critical factor in evaluation research, this has been rarely examined in positive youth development programs, especially in Chinese contexts. To address this issue, this paper focused on process evaluation of a positive youth development program among Hong Kong adolescents called Project P.A.T.H.S. (Positive Adolescent Training through Holistic Social Programmes). The program evaluation of Project P.A.T.H.S. consists of various methods, including focus group interviews, case studies, weekly diary analysis, longitudinal studies, objective and subjective outcome evaluation studies (18–24). In particular, systematic classroom observation and interim evaluation are conducted as a form of process evaluation. Previous findings generally showed that program adherence was high and the program was well implemented in the participating schools (25–29). However, little is known about the influence of other potential factors on the effectiveness of program implementation. Therefore, the purpose of the present study was to explore the relationships between the components of program fidelity, *quality of program delivery* and *participant responsiveness* and overall quality and success of program implementation based on the "co-walker scheme" of the project.

Methods

Of the 167 schools that participated in the Secondary 3 Program of Project P.A.T.H.S. (Positive Adolescent Training through Holistic Social Programmes) in the third year of the Full Implementation Phase in the 2008/09 school year, 63 adopted the full program (i.e., 20-h program involving 40 units) and 104 adopted the core program (i.e., 10-h program involving 20 units). A total of 129 schools (53 that adopted the full program and 76 that adopted the core program) were observed under the co-walker scheme of the project (Table 1). There were 38 schools not observed because of school rejection, time limitation and other unpredictable factors. The observers (i.e., the co-walkers) visited 91.2% of the participating schools, of which 77.2% were observed in the present study. This observation rate was similar to those found in previous studies (27, 29).

Instrument

A rating form was designed for each observer to record how each teaching unit was implemented in the classroom. It includes four major areas: basic information of the class, integration with the school formal curriculum, program adherence, and quality of program delivery. For program adherence, the observers were required to rate the degree of adherence and record the time used to implement the unit. The Curriculum Delivery Assessment Scale was used to measure the quality of program delivery in the areas of student interest, student participation and involvement, classroom control, use of interactive delivery method, use of strategies to enhance student motivation, use of positive and supportive feedback, instructors' familiarity with the students, opportunity for reflection, degree of achievement of the objectives, time management, quality of preparation, overall implementation quality, and success of implementation. The rating form also includes three open-ended questions for the observers to fill in further information. These included their feelings towards the lesson, other feelings or observations, and comments made by the instructors.

Procedures

School and worker consent was obtained prior to the study, which was carried out from October 2008 to May 2009. Each teaching unit was observed by one observer. The observers were seven colleagues of the project, and they were all registered social workers. Before conducting the observational study, the observers were trained to standardize the data collection procedure and rating of classroom observation in order to ensure the quality and consistency of the collected data.

Results

As shown in Table 1, systematic observation of one to three teaching units in schools that adopted the core program or the full program was conducted. There were 182 units under observation, which covered 14 positive youth development constructs, including bonding, social competence, emotional competence, cognitive competence, behavioral competence, moral competence, self-efficacy, prosocial norms, resilience, self-determination, spirituality, clear and positive identity, beliefs in the future, and prosocial involvement. The average duration of observation was 33.77 min per observation. The average numbers of students and instructors per class were 35.48 and 1.96, respectively.

As shown in Table 2, a majority of the observed units was incorporated into school formal curriculum (60.4%), such as Life Education, Civic Education, Liberal Studies, Integrated Humanities, Moral Education, Social Studies, Personal

Table 1 Basic information of observed schools.

Basic information	Hours of training		
	10-h	20-h	Total
Total number of schools observed	76	53	129
Total number of units observed[a]	103	79	182
Number of units observed per school	1–3	1–3	1–3
Average number of students per observation	36.45	34.23	35.48
Average number of instructors per observation	1.99	1.91	1.96
Average duration of observation (min)	34.17	33.24	33.77

[a]The observed units of Secondary 3 Program covered 14 positive youth development constructs, i.e., bonding, social competence, emotional competence, cognitive competence, behavioral competence, moral competence, self-efficacy, prosocial norms, resilience, self-determination, spirituality, clear and positive identity, beliefs in the future, and prosocial involvement.

Table 2 Percentage of observed Tier 1 Program (Secondary 3) units implemented in different modes for schools adopting 10 h and 20 h of implementation.

Different modes	Hours of implementation		
	10-h	20-h	Total
Incorporated into the formal curriculum[a]	54 (52.4%)	56 (70.9%)	110 (60.4%)
Outside formal curriculum[b]	49 (47.6%)	23 (29.1%)	72 (39.6%)
Total	103 (100%)	79 (100%)	182 (100%)

[a]Formal curriculum included Life Education, Civic Education, Liberal Studies, Integrated Humanities, Moral Education, Social Studies, Personal Growth, and Religious Studies. [b]Outside formal curriculum refers to the implementation after school, during holidays, teachers' periods, post-examination days, assemblies or camps.

Growth, and Religious Studies. About one-third of observed units were implemented outside formal curriculum (39.6%), such as after school hours, and during holidays, teachers' periods, post-examination days, assemblies or camps.

Reliability findings showed that the Curriculum Delivery Assessment Scale was highly reliable (α=0.94; mean inter-item correlations=0.56). To obtain an overall picture, the ratings for each item across all units were averaged. Results in Table 3 revealed that the mean rating of lesson preparation was high (5.36 on a seven-point rating scale). An examination of different curriculum delivery aspects showed that the mean ratings were generally high (over 4.5 on a seven-point rating scale).

In addition, the average overall adherence to the curriculum manuals was 73.85% (Table 3). For the observed units, where modifications had been made, the observers generally regarded the changes to be reasonable. However, two observed units were rated low (adherence rate=0%). In one of these observed units, the observer reported that the instructors had not followed the intended lesson plan. In the other observed unit, the observer's comments were:

"Instructor and students lacked motivation for the lesson. For the sake of classroom control, the instructor adopted strict disciplinary control which prevented students from expressing themselves freely, even though some students were interested in the topic. During the whole lesson, instructor just asked students to write down three methods of helping a depressed friend. The unit ended after students had written the answers on the blackboard."

In Table 4, results of Pearson's correlation analyses showed that all 13 items (including student interest, student participation and involvement, classroom control, interactive delivery method, strategies to enhance student motivation, use of positive and supportive feedback, instructors' familiarity with the students, opportunity for reflection, degree of achievement of the objectives, time management, lesson preparation, overall implementation quality, and success of program implementation) were positively correlated amongst themselves as predicted. Particularly, the overall implementation quality (item 12) and success of implementation (item 13) were highly correlated (r=0.81, p<0.01). Moreover, both were significantly and positively correlated with all the other items, and had relatively high correlations with students participation and involvement (item 2, r=0.76 and r=0.73, p<0.01), use of positive and supportive feedback (item 6, r=0.74 and r=0.71, p<0.01), opportunity for reflection (item 8, r=0.72 and r=0.75, p<0.01) and degree of achievement of the objectives (item 9, r=0.75 and r=0.78, p<0.01).

Based on these findings, separate standard multiple regression analyses were performed to examine the contribution of

Table 3 Cronbach's α coefficients, means and standard deviations of the Curriculum Delivery Assessment Scale, and average adherence rate.

Quality of curriculum delivery	Corrected item – total correlation	Total α if item is deleted	Mean	Standard deviation
Student interest	0.77	0.93	4.93	0.96
Student participation and involvement	0.78	0.93	4.91	0.96
Classroom control	0.74	0.94	4.99	0.99
Interactive delivery method	0.79	0.93	4.77	0.90
Strategies to enhance student motivation	0.73	0.94	4.84	0.90
Use of positive and supportive feedback	0.80	0.93	4.78	0.89
Instructors' familiarity with the students	0.45	0.95	4.95	1.18
Opportunity for reflection	0.76	0.93	4.88	0.87
Degree of achievement of the objectives	0.79	0.93	4.97	0.90
Time management	0.61	0.94	4.98	0.96
Lesson preparation	0.51	0.94	5.36	0.72
Overall implementation quality	0.88	0.93	4.88	0.88
Success of implementation	0.82	0.93	4.91	0.91
	Cronbach's α=0.94		Average adherence=73.85%	

Table 4 Intercorrelations among items of the Curriculum Delivery Assessment Scale.

Item	1	2	3	4	5	6	7	8	9	10	11	12	13
Student interest	1.00												
Student participation and involvement	0.83[b]	1.00											
Classroom control	0.61[b]	0.63[b]	1.00										
Interactive delivery method	0.66[b]	0.70[b]	0.62[a]	1.00									
Strategies to enhance student motivation	0.55[b]	0.53[b]	0.60[b]	0.66[b]	1.00								
Use of positive and supportive feedback	0.70[b]	0.64[b]	0.68[b]	0.62[b]	0.66[b]	1.00							
Instructors' familiarity with the students	0.28[b]	0.31[b]	0.47[b]	0.42[b]	0.40[b]	0.35[b]	1.00						
Opportunity for reflection	0.62[b]	0.66[b]	0.51[b]	0.66[b]	0.57[b]	0.65[b]	0.37[b]	1.00					
Degree of achievement of the objectives	0.63[b]	0.64[b]	0.64[b]	0.62[b]	0.58[b]	0.68[b]	0.30[b]	0.67[b]	1.00				
Time management	0.46[b]	0.40[b]	0.53[b]	0.43[b]	0.46[b]	0.56[b]	0.35[b]	0.48[b]	0.59[b]	1.00			
Lesson preparation	0.35[b]	0.34[b]	0.27[b]	0.48[b]	0.50[b]	0.38[b]	0.33[b]	0.41[b]	0.45[b]	0.32[b]	1.00		
Overall implementation quality	0.74[b]	0.76[b]	0.65[b]	0.73[b]	0.69[b]	0.74[b]	0.39[b]	0.72[b]	0.75[b]	0.57[b]	0.55[b]	1.00	
Success of implementation	0.68[b]	0.73[b]	0.54[b]	0.67[b]	0.61[b]	0.71[b]	0.30[b]	0.75[b]	0.78[b]	0.56[b]	0.45[b]	0.81[b]	1.00

[a]$p<0.05$; [b]$p<0.01$.

the 11 aspects of program delivery to: (a) overall implementation quality; and (b) success of implementation. Results in Table 5 indicated that the overall implementation quality was significantly predicted by student participation and involvement ($\beta=0.25$, $p<0.01$), strategies to enhance student motivation ($\beta=0.11$, $p<0.05$), use of positive and supportive feedback ($\beta=0.12$, $p<0.05$), degree of achievement of the objectives ($\beta=0.15$, $p<0.01$), and lesson preparation ($\beta=0.16$, $p<0.01$). The model explained for 80% of the variance in overall implementation quality [$F_{(11,\ 170)}=61.75$, $p<0.01$]. Similarly, success of implementation was significantly predicted by student participation and involvement ($\beta=0.28$, $p<0.01$), classroom control ($\beta=-0.19$, $p<0.01$), use of positive and supportive feedback ($\beta=0.16$, $p<0.05$), opportunity for reflection ($\beta=0.20$, $p<0.01$), degree of achievement of the objectives ($\beta=0.34$, $p<0.01$) and time management ($\beta=0.11$, $p<0.05$). The model explained for 77% of the variance in implementation success.

Discussion

The purpose of the study was to explore the relationship between the components of program delivery and the overall implementation quality and implementation process. Despite the increased popularity of program fidelity in evaluation research, very few studies have addressed this issue in the Chinese context. Identifying determinants of effective program implementation could provide insights for researchers and practitioners to disseminate the program to other settings and contexts.

Although program adherence in this study was slightly lower than those reported in the previous studies (28, 29), it could still be regarded as high (73.9%). Participants generally perceived the program implementation positively as reflected by the results of different aspects of the program delivery (above 4.8 on a seven-point scale). A high quality of program delivery and positive participant responsiveness could increase the fidelity of program implementation and potentially improve the program outcomes (30, 31). Therefore, it is conjectured that high levels of program adherence and quality of program delivery may contribute to the positive program effects as observed in the project.

Several factors should be considered when interpreting this relatively "low" average adherence rate. First, classes were observed by seven observers, fluctuations in observations may affect the ratings of the adherence results. Although systematic training had been provided to the observers before visits, this explanation is still a plausible one. Second, there was only one observer for each visit, so reliability of the ratings could not be adequately assessed. Third, as there are complex developmental issues in Secondary 3 students as compared to those in Secondary 1 and Secondary 2 levels, there may be a genuine need to adapt the program in different unique school

Table 5 Summary of the multiple regression analyses.

Overall implementation quality		Success of implementation	
Predictors	β[c]	Predictors	β[c]
Student participation and involvement	0.25[a]	Student participation and involvement	0.28[a]
Strategies to enhance student motivation	0.11[b]	Classroom control	–0.19[a]
Use of positive and supportive feedback	0.12[b]	Use of positive and supportive feedback	0.16[b]
Degree of achievement of the objectives	0.15[a]	Opportunity for reflection	0.20[a]
Lesson preparation	0.16[a]	Degree of achievement of the objectives	0.34[a]
		Time management	0.11[b]
	$R^2=0.80$		$R^2=0.77$

[a]$p<0.01$; [b]$p<0.05$; [c]standardized coefficients.

contexts. It is suggested more research should be carried out to examine these possibilities in the future.

Greater involvement of the participants, better preparation of the program activities, provision of positive feedback, and the presence of an interactive and well-managed learning atmosphere were significant predictors to the success and overall quality of program implementation. It has been extensively documented that active engagement of participants is a critical factor for the program implementation process (32, 33). Our findings further highlighted the importance of providing opportunities for reflection when evaluating the implementation process of a positive youth program. The present study adds to the body of evaluation research by indicating what elements should be included when developing a rigorous process evaluation framework.

Positive responses and perceptions toward the program (e.g., satisfaction with the program, high levels of achievement of the program's objectives, active involvement of the participants) are essential elements for facilitating continual participation in the program. Participants with higher levels of satisfaction toward the program are likely to recommend the program to friends and others (34). The present study demonstrates the importance of program implementation quality and participant responsiveness (i.e., presence of an interactive and warm atmosphere) when implementing a program.

Although program fidelity was examined in this study, any linkage between program fidelity and program outcomes is unknown. Previous prevention research revealed the importance of program fidelity to program outcomes (31). Findings based on process evaluation do not only help us better understand the process of program implementation, but also improve the condition by acknowledging the barriers and facilitators to conducting the program, and thereby increasing the likelihood of achieving the primary outcomes of the program. More research in this area is warranted to examine the linkage between program fidelity and program outcomes in the future.

To depict a complete picture of program integrity, Dane and Schneider (16) strongly recommended that all five components (i.e., adherence, dose, quality of program, participant responsiveness, program differentiation) should be focused. As program differentiation was not measured in this study, future research should be conducted to address this dimension. Other components should also be examined in future studies. For example, organizational characteristics, such as support from the principal and administrative staff, school climate, and teachers' efficacy to teach the program, are shown to be associated with program fidelity (35).

There were several limitations to the present study. First, as the data were collected from Secondary 3 students, the findings might not be representative of other student populations. Also, because of the cross-sectional nature of the data, we cannot conclude the causal direction between the components of program delivery and the effectiveness of program implementation. Another limitation is the use of the self-report approach for evaluating the program implementation. Using mixed methods, such as the addition of interview and case study, might be helpful to provide triangulation data for more valid and reliable process evaluation findings.

Despite the above limitations, there are several unique features of the present study. First, the data were collected in a large-scale Chinese positive youth program, which was rare in process evaluation studies of positive youth development programs. Second, few interventions have been evaluated over multiple years. The current study presented the findings of the third implementation year and revealed that the major components of Project P.A.T.H.S. were implemented with a high degree of fidelity. The current findings are consistent with the data collected in previous years among students of different grade levels (27–29). This suggested that the content of Project P.A.T.H.S. (Secondary 3 Program) was implemented as it was originally designed, indicating the program was successfully conducted. In conjunction with evaluation findings collected via other means, the present study further supports the beneficial effects of the Tier 1 Program of Project P.A.T.H.S. among the Chinese students (18–24).

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