


# Effectiveness of Parenting Program for Macau Shift Work Parents: Randomized Controlled Trial

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## Abstract

**Purpose:** This study aimed to evaluate the effectiveness of the Happy Parenting: Round-the-Clock Parenting (HPRCP) program for Macau parents on shift work, using randomized controlled trial design. **Methods:** The participants included 154 parents on shift work who were randomized into the intervention ( $n = 78$ ) and waitlist control ( $n = 76$ ) groups. Participants were requested to complete a set of questionnaires on their children's behavior, their own parenting stress, parenting practices, and emotion-focused parenting style both before and after the completion of the program by the intervention group. **Results:** Analysis was by intention-to-treat. The results indicated significant reduction in child behavior problems, parenting stress, and dysfunctional parenting practices in the intervention group after intervention. **Conclusions:** The results provided promising evidence on the effectiveness of the HPRCP program for parents on shift work.

## Keywords

children, parenting, shift work

Shift work was defined as a system where people worked during different defined periods of time regularly (McDowall et al., 2017). While the effectiveness of parent training was well documented (e.g., Barlow et al., 2016; Mingeback et al., 2018), there has been limited research on the effectiveness of parent training for parents on shift work.

According to the work-family conflict model (Greenhaus & Beutell, 1985), there were three forms of work-family conflicts, namely time-based, strain-based, and specific behavior-based conflicts. Time-based conflicts existed when time spent on one role led to difficulties in fulfilling the requirements or expectations of other roles. Strain-based conflicts existed when stress from one role adversely impacted on the performance in another role. Specific behavior-based conflicts referred to work behavior which might be in conflict with the family role which was usually warm and nurturing. For time-based conflicts, in the case of shift work parents, there could be a conflict between their shift work schedule and their parenting role. Their shift work pattern might make it difficult for them to spend time with their children. Parents of younger children might experience more time-based conflicts as younger children were more dependent on their parents than older children, and shift work parents might not be able to be with their children when they needed them. In a literature review on the impact of shift work on health-care professionals, it was found that shift work was associated with family conflicts, isolation from families and friends, and feelings of inability to perform domestic roles

(Wilson, 2002). In a study on health-care professionals in Australia, Brazil, Croatia, and the United States, it was found that shift work, especially work on Sundays, was associated with higher work-family conflict, as the workers had to be away when there were family obligations (Barnes-Farrell et al., 2008). In another study on nurses, shift work, especially shift work with nights and irregular day work, was associated with work-family conflict. Work-family conflict was associated with emotional exhaustion in the shift worker (Camerino et al., 2010, Willis et al., 2008). For strain-based conflicts, shift work could disrupt the shift workers' circadian rhythms, and it was associated with poor sleep quality and depressive symptoms (McDowall et al., 2017; Vallieres et al., 2018) and these might impact on parenting. Parental depression was found to be associated with more hostile parenting and more negative affect in children (Institute of Medicine, 2009). Punitive and harsh parenting mediated the association between parental stress and child behavior problems (Shawler & Sullivan,

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2015). Shift work parents who felt stressed and tired might be more likely to use punitive and harsh parenting strategies which could lead to more child problem behavior, thus increasing their own parenting stress (Yeo & Teo, 2013). Specific behavior conflicts were more likely to be associated with the nature of the work rather than shift work per se.

In terms of designing a parent training program for shift workers, there were some challenges. First, it might be difficult for these parents to attend parent training programs scheduled at fixed times on particular days of the week. For other working parents not on shift work, parent training programs could be organized during weekends or evenings. However, this might not be possible for shift workers with irregular shift work patterns. Second, the parents might be working while their children were at home, and this made it difficult for parents to spend time with their children and practice the parenting strategies acquired in parent training. Unlike other working parents who could return home in the evenings and spend time with their children, shift work parents might be away from home, while their children were at home in the evenings. Apart from the time-based conflicts (Wilson, 2002) mentioned above, this would make it harder for them to practice the parenting strategies learnt with their children. Third, the parents might have to depend on family members or childcare facilities to look after the children, and these people might use child management strategies not consistent with those advocated in parent training programs. While this challenge could be similar for working parents on shift or not on shift, children of shift work parents might spend more time with caregivers as their parents might be less likely to be at home when children were at home (e.g., evenings). These factors had implications on the organization of parent training programs in terms of the logistic arrangement of the schedule as well as the content. The program content might need to include strategies for parents who could not often be at home with their children and had to rely on caregivers who might have inconsistent child management strategies with the parents. The program would also need to address the time-based and strain-based conflicts experienced by parents on shift work (McDowall et al., 2017; Vallieres et al., 2018).

### *The Macau Situation*

Macau is a special administrative region of China. According to the 2016 bi-census (Department of Statistics and Census Service, 2016), the total population of Macau was 667,400 at the end of 2018, and 80% of the population aged 3 or above spoke Cantonese. The labor force participation rate was 70.9%. There were 41 casinos (Department of Statistics and Census Service, 2019), and in 2016, 23.8% of the working population worked in the gaming industry (Sheng & Gu, 2018).

As the casinos are open 24 hr, the employees in the gaming industries are required to work on shifts (S. Chan et al., 2015). In a qualitative study on shift workers working in casinos in Macau, shift work was found to have caused deterioration in social and family relationships (Wong & Lam, 2013). In another qualitative study on shift workers working in casinos

in Macau, S. Chan et al. (2015) pointed out that shift workers had less time to see their family members including their children. Furthermore, because of the strain of the job, they were exhausted after work and had little energy to spend time with family members.

As a fair percentage (23.8%) of the Macau population are working in the gaming industry, the family situation of these shift workers is a public health concern. The family lives of these workers and their children's development might be at risk if there is little support for these families.

### *The Happy Parenting: Round-the-Clock Parenting Program (HPRCP)*

In order to support the parents on shift work in Macau, a parent training program, "HPRCP," was developed. With the support of the management of two properties within an integrated resort, parent employees were allowed to attend the program during their work hours. This arrangement was important as it was difficult for shift workers to attend parent training programs in social services centers which were usually delivered during a fixed day and time in the week.

The program took reference from the work-family conflict model to understand the needs of parents on shift work and adopted the social learning theory in terms of the content of the program, which targeted both child behavior problems and child emotional competence. In line with the literature on work-family conflicts, the HPRCP focused on the reduction of parenting stress and improvement in family relationship (Wong & Lam, 2013). As stressed parents were more likely to use punitive disciplines and their children displayed more behavior problems and negative affect (Institute of Medicine, 2009; Shawler & Sullivan, 2015), the HPRCP aimed to introduce positive parenting strategies and emotion coaching strategies to improve parent-child relationship, reduce child behavior problems, and improve child emotional competence.

In terms of child behavior management, parenting programs based on social learning theories focused on behavior management strategies such as strategies to increase positive behavior and strategies to manage undesirable behavior. These programs were found to be effective in producing positive child behavior and reduction in parenting stress (Barlow et al., 2016; Barlow et al., 2014).

In terms of child emotional competence, we drew on the emotion socialization literature, which was based on social learning mechanisms (Kilic, 2015), Havighurst et al. (2010) argued that behavior-focused programs did not address the parents' emotional responsiveness toward the child and these programs might not be able to address child emotional competence. Havighurst et al. (2010) developed the "Tuning into Kids" program where parents were taught steps in emotion coaching, such as attending to children's emotion, reflecting, labeling, and empathizing with the children's emotion. The results of randomized controlled trial studies indicated significant increase in parents' own emotion coaching, and children's emotion knowledge, as well as decrease in

child behavior problems (Havighurst et al., 2013; Havighurst et al., 2010).

There were some parent training programs in Hong Kong Chinese communities with a focus on behavior management, using a social learning approach, such as the Happy Parenting Program (C. Leung et al., 2016) and Hands-On Parent Empowerment-20 (C. Leung et al., 2017). These programs were effective in reducing child behavior problems, parenting stress, and dysfunctional parenting practices. Other research showed that parenting programs based on social learning principles were effective across cultures including Chinese culture (Gardner et al., 2016).

However, there was no published information on the effectiveness of emotion coaching programs in Chinese parents. Chinese culture valued relatedness, hierarchy, control, obedience, maintenance of social order and harmony (Chen et al., 1998; Kagitcibasi, 1994). Restraining of personal desire and inhibition of behavior was encouraged, whereas open/natural expression of emotion was not (Chen et al., 1998). In a study on Chinese mothers in Hong Kong, Chinese mothers valued relational emotional competence more than individualistic emotional competence. The former emphasized interpersonal harmony and placed more emphasis on learning of emotion-display rules rather than understanding emotions. The latter valued natural expression of emotion and emotional independence (S. M. Chan et al., 2009). Mothers who valued relational emotional competence were more likely to adopt an emotion-dismissing approach and were less likely to adopt an emotion-encouraging approach (S. M. Chan et al., 2009). In another study on parental beliefs of Chinese mothers, they did not believe that parents should take an active role in their children's emotion learning (S. M. Chan, 2012). These suggested that Chinese parents might not be aware of the importance of emotion socialization and they might not use emotion coaching practices in dealing with their children's affect.

The HPRCP program integrated both behavior management and emotion coaching components, which were both based on the social learning model. This integrated approach was also adopted by Salmon et al. (2014), and the results of their study indicated that the mothers in the integrated program reported more discussion of emotion labels and causes with their children at postintervention.

The HPRCP program was developed by a Hong Kong team of educational psychologists and a social worker. The program took reference from local evidence-based parenting programs adopting a social learning approach (e.g., C. Leung et al., 2016, 2017) as well as literature on emotion coaching. The program consisted of eight sessions and the content included strategies to build up parent-child relationship, strategies to increase desirable behaviors, strategies to manage inappropriate behaviors, and emotion coaching skills. The details of the program are in Table 1.

In the program, special tips were designed for parents on shift work to enable them to practice their newly learnt strategies with their children. For example, in terms of spending quality time with their children, parents could use their break

**Table 1.** Program Outline.

Session	Objectives	Content
1	Building up parent-child relationship	<ul style="list-style-type: none"> <li>• Shared joy</li> <li>• Promoting exploration</li> </ul>
2	Promoting desirable behavior	<ul style="list-style-type: none"> <li>• Praise</li> <li>• Rewards</li> </ul>
3	Promoting child skills (1)	<ul style="list-style-type: none"> <li>• Ask, say, encourage, praise</li> <li>• Emotion coaching strategies</li> </ul>
4	Promoting child skills (2)	<ul style="list-style-type: none"> <li>• Five-step response to child emotions</li> <li>• Understanding misbehavior</li> </ul>
5	Prevention of behavioral problems	<ul style="list-style-type: none"> <li>• Behavior analysis</li> <li>• Environment accommodation</li> <li>• Use of family rules</li> <li>• Giving effective instructions</li> <li>• Substitute activities</li> </ul>
6	Reducing undesirable behaviors	<ul style="list-style-type: none"> <li>• Intentional neglecting</li> <li>• Use of consequences</li> </ul>
7	Reducing undesirable behaviors	<ul style="list-style-type: none"> <li>• Quiet time</li> <li>• Skills integration</li> </ul>
8	Synthesis of skills and strategies	<ul style="list-style-type: none"> <li>• Review of the integration plan</li> <li>• Reflection on parenting</li> <li>• Working with caregivers</li> </ul>

time to communicate with their children through internet such as face time. They could plan ahead and inform their children about the "play time" or "chat time" according to their work schedule. Other tips included working with family members responsible for looking after the children while the parents were at work. For example, parents could invite family members to video-record children's positive behavior so that parents could give praise and reward the children when they saw them. When family members reported children's misbehavior while parents were at work, parents could use various questioning skills to understand and analyze the situation thoroughly (e.g., the antecedents and consequences of the misbehavior). More importantly, parents should master the new strategies themselves first before introducing them to family members. Parents also needed to adjust their expectations according to the personal characteristics and capacity of the family members, as some family members might need more time and support to learn new strategies. For emotion coaching, the basic steps of emotion coaching strategies including observation, empathy, reflection, dealing with emotion, and problem-solving were taught, with examples suited for shift work parents (e.g., in the case of a child waking up from a bad dream in the middle of the night and parents were not at home due to night shift, caregivers could let the child talk to his or her parents on the phone). In addition, to help shift work parents deal with their own emotional stress, abdominal breathing and muscular relaxation techniques were taught.

The program was first piloted by the Hong Kong program development team with Macau parents on shift work, and the results indicated significant decreases in child behavior problems and dysfunctional parenting practices. Based on the experience with the Macau participants, the program was fine-tuned.

## This Study

This study aimed to evaluate the effectiveness of the HPRCP program using randomized controlled trial design. The primary outcome was child behavior problems as assessed by parent-report questionnaire on child behavior problems. The secondary outcomes were parenting stress, dysfunctional parenting practices, and emotion-related parenting style (ERPS) as assessed by parent-report questionnaires on these variables. The hypotheses were:

**Hypothesis 1:** The intervention group participants would report lower child behavior problems than control group participants at postintervention.

**Hypothesis 2:** The intervention group participants would report lower parenting stress and less use of dysfunctional parenting practices than control group participants at postintervention.

**Hypothesis 3:** The intervention group participants would report higher endorsement of emotion coaching parenting style and parental acceptance of negative emotion as well as lower endorsement of parental rejection of negative emotion and feelings of uncertainty/ineffectiveness in emotion socialization than control group participants at postintervention.

## Method

### Design and Setting

This study adopted a parallel randomized controlled trial design without blinding. The allocation ratio was 1:1. The study was conducted in two properties within an integrated resort in Macau.

### Participants

The inclusion criteria were (i) parents of children with normal development (based on parent report) aged between 3 and 7 years, (ii) parents were currently living together with their children in Macau, (iii) parents were shift workers, and (iv) parents were able to read Chinese. The participants included 154 shift workers (intervention = 78, control = 76) who worked in two properties within an integrated resort aforementioned. Parents with children with known developmental disabilities were excluded.

Taking reference from an existing parent training program for Chinese population (C. Leung et al., 2017), a sample size of 84 per group would be needed ( $\alpha = .05$ , power = .80), according to G\*power.

### Measures

Participants were requested to complete a set of questionnaires twice. The questionnaires included the following:

**Eyberg Child Behavior Inventory (ECBI; Eyberg & Ross, 1978):** This 36-item questionnaire consisted of two scales. The Intensity Scale measured the frequency of problem behavior on a 7-point scale. The Problem Scale measured parent concern about problem behavior and was scored as 1 or 0. Higher scores indicated higher frequency of problem behavior and parent concern. A validated Chinese version of the scale (C. M. Leung et al., 2003) was used in this study.

**Parenting Stress Index (PSI; Abidin, 1990):** This scale consisted of 36 items rated on a 7-point scale. It consisted of three subscales, namely Parental Distress, measuring the degree of distress experienced by parents; Parent-Child Dysfunctional Interaction, measuring parental perception of negative parent-child relationship; and Difficult Child, assessing children's behavior problems. A total score could also be obtained by summing up the scores of all items. Higher scores indicated higher parenting stress. A validated Chinese version (Lam, 1999) was used in this study.

**Parenting Scale (PS; Arnold et al., 1993):** This was a 30-item questionnaire on dysfunctional parenting practices, with three subscales: Laxness, Over-Reactivity, and Verbosity. Each item was rated on a 7-point scale with one effective and one ineffective parenting practice at either end. Higher scores indicated higher endorsement of ineffective parenting practices. A Chinese version validated by W. Y. Chan (2017) was used in this study.

**Emotion-Related Parenting Styles (ERPS; Paterson et al., 2012):** This 20-item scale consisted of four factors, each with 5 items: (i) emotion coaching parenting style, (ii) parental rejection of negative emotion, (iii) parental acceptance of negative emotion, and (iv) feelings of uncertainty/ineffectiveness in emotion socialization. Higher scores indicated higher endorsement of the particular domain. A Chinese version validated by Au (2017) was used in this study.

**Demographic information:** Participants were requested to provide information about their demographic background, including age, gender, education level, occupation, monthly family income, and so on.

### Procedures

The information on the parent training program was disseminated through the Human Resource Office (HRO) of two properties within an integrated resort to staff members. Staff were informed that they would be allowed 2 hr within their shifts to attend the classes. Special arrangement in rostering was made to ensure that the participating staff members were rostered to the "day" shift (from 3:00 p.m. to 11:00 p.m. in one property and from 2:00 p.m. to 10:00 p.m. in another property) on days when their classes were scheduled. Staff members enrolled with the HRO during the recruitment period (December 2018). The intervention participants attended the parent training program in their respective properties within the holiday

resort in two batches: from February to April 2019 and from May to July 2019.

Upon closure of enrolment by the end of December 2018, the staff numbers of those enrolled were sent to the first author who randomized them into intervention and waitlist control groups within their workplaces (the two properties within an integrated resort) using a random number table. In cases where a couple were both enrolled but were randomized into intervention and waitlist control groups, the waitlist control group spouse was excluded from the study due to the issue of contamination, but this participant could still attend the waitlist control group classes.

The intervention group participants were sent the QR code for the online questionnaire and consent form before they started the program and after program completion through the HRO. The QR code for the online questionnaire and consent form was also sent to waitlist control group participants by the HRO at the time when the first batch intervention group participants received their preintervention online questionnaire. The waitlist control group participants were sent the online questionnaire again after an 8-week interval. Only the research team could access the completed online questionnaires and consent forms.

There was no service offered to the waitlist control group while the intervention group participated in the parenting program. The waitlist control participants attended the parent training upon the completion of the training by the intervention group participants.

The study was approved by the ethics committee of the first author's institution. The study was registered with the ISRCTN Registry (ISRCTN46679465).

### *The Intervention*

The HPRCP program consisted of eight 2-hr sessions conducted weekly by program officers (with tertiary training in education, psychology, counseling, social work, sociology, or social welfare policy) from a nongovernmental social service organization in Macau. The program was delivered on site within the two properties within an integrated resort. The session started with revision of the previous session's content and discussion of homework. Then, the facilitator presented the topic of the session. Participants were given homework where they had to try out the parenting strategies taught with their children. Role play was used to ensure that the participants could master the parenting strategies required in the homework activities. A program manual was produced with facilitator's manual for facilitators, notes for parents, homework sheets, and power point slides for presentation.

Before delivering the HPRCP program, the program officers attended training delivered by the Hong Kong program development team and observed the team's delivery during the pilot phase. Throughout the trial, the educational psychologists and the social worker from the program development team observed the program delivery and discussed areas for improvement after each session.

### *Data Analysis*

Analysis was by intention-to-treat. Missing postintervention data were estimated using multiple imputation (five imputations), with preintervention scores as predictors. The main analysis method was multiple regression with preintervention outcome measures as independent variables and postintervention outcome measures as dependent variables. In addition, independent sample *t* test and  $\chi^2$  test were used to examine possible baseline differences between the intervention and waitlist control groups.

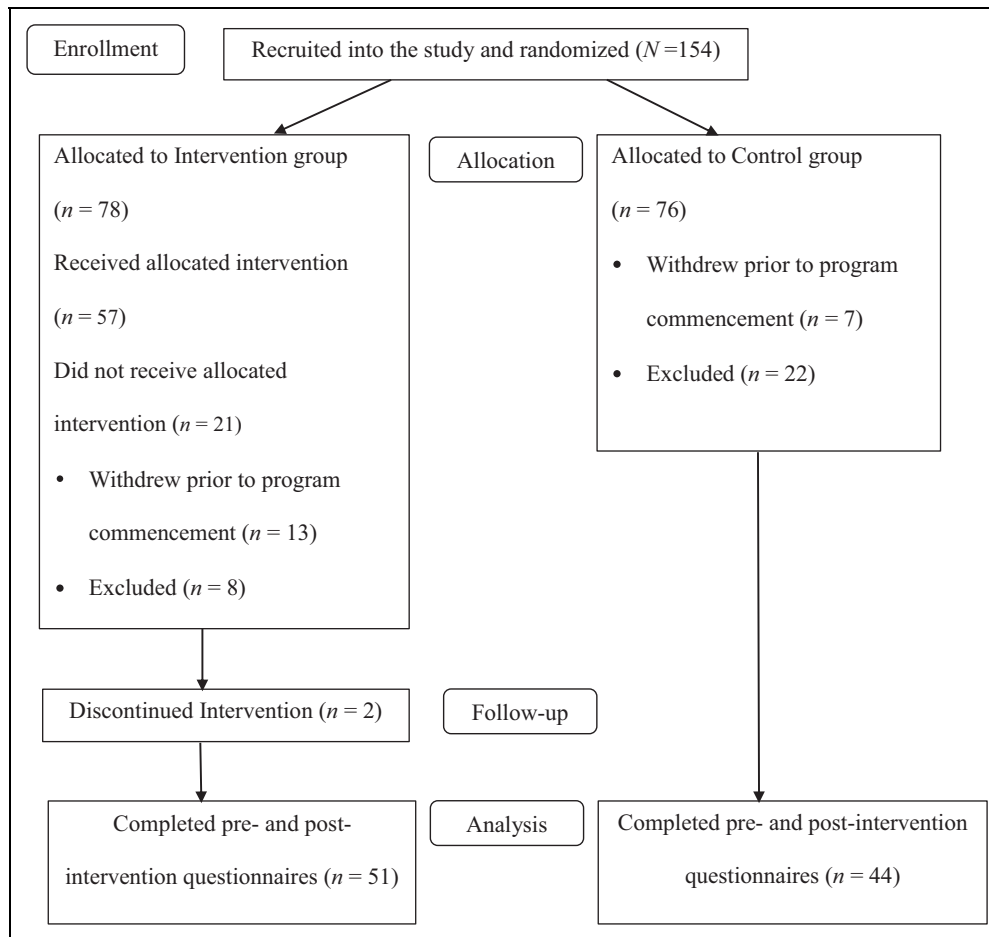
To estimate whether the magnitude of change was reliable statistically, reliable change was calculated. This referred to the difference between preintervention and postintervention outcome scores over standard error of difference (Jacobson & Truax, 1991). Logistic regression was used to examine the differences in proportions of participants in the intervention and waitlist control groups who could achieve reliable change in the outcome measures (coded as a binary variable where 1 = *achieved*, 0 = *did not achieve*).

## **Results**

### *The Sample*

Among the intervention group participants ( $n = 78$ ), 13 withdrew from the program before the commencement of the program though three of these completed the preintervention questionnaires. There were four participants who refused to complete the preintervention and postintervention questionnaires despite repeated reminders. Two participants could not attend the intervention group classes due to health and work reasons, but they were able to attend the classes of the waitlist control group. These two participants were excluded from the study so they could attend the waitlist control group classes without completing questionnaires. After collecting the preintervention questionnaires, six participants were excluded because the age of their target children was outside the inclusion range. Two participants withdrew after the commencement of the program. There were 51 participants with complete preintervention and postintervention data. Among the waitlist control group participants ( $n = 76$ ), seven withdrew from the program before the commencement of the program, though two of these completed the preintervention questionnaires. There were two participants who refused to complete the preintervention and postintervention questionnaires despite repeated reminders. There were six participants who were excluded from the study because their spouses were allocated to the intervention group. They could attend the waitlist control group classes but were not required to complete the questionnaires. There were 16 participants who were excluded because the age of their target children was outside the inclusion range. There were 44 participants with complete preintervention and postintervention data. The flow of the participants is shown in Figure 1.

There were no significant differences in demographic characteristics and preintervention scores between participants with



**Figure 1.** Flow of participants throughout the program.

complete and incomplete data except level of education of participants' spouses,  $\chi^2(1) = 6.38, p = .023$ . There was a higher percentage of spouses with junior secondary education or below among participants with incomplete data ( $n = 5, 62.5\%$ ) than participants with complete data ( $n = 21, 22.1\%$ ).

There were no significant differences in demographic characteristics and preintervention scores between the intervention and waitlist control groups, except the position of the participants,  $\chi^2(1) = 5.58, p = .018$ . There were more participants in supervisor/manager position in the intervention group ( $n = 48, 85.7\%$ ) than the waitlist control group ( $n = 31, 66.0\%$ ). This variable was used as an independent variable in the regression analyses, in addition to group status and the respective preintervention scores. The reliability estimates of most scales were above .70 except the EPRS subscales, PS-Laxness, PS-Verbosity, and PS-total scores. For the PS Scale, it was decided to only include the PS-Over-Reactivity subscale in the analysis as its reliability was above .70. The EPRS subscales were retained in the analysis as they were the only available measures on emotion coaching in the data set. The baseline demographic characteristics and preintervention outcome scores of the participants are shown in Table 2. The postintervention outcome scores of the participants and the effect sizes (unadjusted and adjusted) are shown in Table 3.

### Intention-to-Treat Analysis

Little's missing completely at random test was used to examine missing values. This test tested the null hypothesis that values were missing completely at random. The result was nonsignificant ( $p = 1.00$ ), and the null hypothesis was not rejected. Missing data were estimated using multiple imputation (five imputations) based on all preintervention measures, and the automatic option in SPSS (version 25) was used. This option scanned the data and adopted the monotone method for data with a monotone pattern. It would use a fully conditional specification if otherwise.

There were 51 participants who withdrew without completing the preintervention questionnaires, refused to complete the preintervention questionnaires, or were excluded from the study. There was no available data from these participants. The remaining 103 (intervention: 56, waitlist control: 47) participants were included in the intention-to-treat analysis.

In terms of child behavior problems, multiple regression results indicated that group status was significant for ECBI-Intensity ( $b = 11.01, t = 3.29, p = .001$ ) and ECBI-Problem ( $b = 6.11, t = 2.73, p = .008$ ). At postintervention, the intervention group participants reported lower frequency of child behavior problems and were less concerned about

**Table 2.** Baseline Characteristics and Preintervention Scores of Intervention and Waitlist Control Group Participants.

Demographic and pre-intervention outcome variables	Intervention Group (n = 56) Number (%)	Waitlist Control Group (n = 47) Number (%)	Significance	Reliability
Relationship of participant to child—mother	37 (66.1%)	12 (25.5%)	$\chi^2(2) = 1.48, p = .477$	NA
Relationship of participant to child—father	18 (32.1%)	35 (74.5%)		
Relationship of participant to child—others	1 (1.8%)	0 (0%)		
Participant’s marital status—married/de facto	46 (82.1%)	44 (93.6%)	$\chi^2(1) = 3.05, p = .081$	NA
Participant’s marital status—single/widowed/divorced/separated	10 (17.9%)	3 (6.4%)		
Participant’s position—cashier, dealer, or others	8 (14.3%)	16 (34.0%)	$\chi^2(1) = 5.58, p = .018$	NA
Participant’s position—supervisor or manager	48 (85.7%)	31 (66.0%)		
Participant’s education—junior secondary or below	7 (12.5%)	8 (17.0%)	$\chi^2(1) = 0.42, p = .517$	NA
Participant’s education—senior secondary or above	49 (87.5%)	39 (83.0%)		
Spouse’s employment—employed	48 (85.7%)	40 (85.1%)	$\chi^2(2) = 1.04, p = .595$	NA
Spouse’s employment—not employed	5 (8.9%)	6 (12.8%)		
Spouse’s employment—others/not applicable	3 (5.4%)	1 (2.1%)		
Spouse’s education—junior secondary or below	13 (23.2%)	13 (27.7%)	$\chi^2(1) = 0.27, p = .605$	NA
Spouse’s education—senior secondary or above	43 (76.8%)	34 (72.3%)		
Family income <sup>a</sup> —MOP 20,000 or below	3 (5.4%)	1 (2.1%)	$\chi^2(1) = 0.11, p = .623$	NA
Family income <sup>a</sup> —MOP 20,001 or above	53 (94.6%)	46 (97.9%)		
Child gender—boy	28 (50%)	23 (48.9%)	$\chi^2(1) = 0.10, p = .914$	NA
Child gender—girl	28 (50%)	24 (51.1%)		
	Mean (SD)	Mean (SD)		
Number of children	1.70 (0.87)	1.87 (0.71)	$t(101) = 1.17, p = .271$	NA
Number of family members	4.09 (1.08)	4.32 (1.24)	$t(101) = 1.01, p = .317$	NA
Target child’s age	4.20 (1.78)	4.60 (1.77)	$t(101) = 1.14, p = .258$	NA
Participant’s age	34.48 (4.00)	35.28 (4.03)	$t(101) = 1.00, p = .319$	NA
ECBI-Intensity	130.55 (24.39)	133.78 (18.16)	$t(101) = 0.75, p = .455$	.91
ECBI-Problem	15.48 (10.76)	17.17 (10.48)	$t(101) = 0.80, p = .424$	.95
ERPS-Emotion coaching	20.07 (2.00)	20.11 (2.21)	$t(101) = 0.08, p = .933$	.61
ERPS-Parental rejection of negative emotion	17.00 (2.44)	16.72 (2.83)	$t(101) = 0.53, p = .596$	.38
ERPS-Parental acceptance of negative emotion	16.77 (2.64)	17.13 (2.27)	$t(101) = 0.74, p = .464$	.59
ERPS-Feelings of uncertainty/ineffectiveness in emotion socialization	15.16 (2.67)	15.38 (2.95)	$t(101) = 0.40, p = .689$	.64
PS-Over-Reactivity	34.05 (8.67)	33.09 (9.04)	$t(101) = 0.55, p = .581$	.77
Parenting stress	94.66 (19.05)	98.26 (18.34)	$t(101) = 0.97, p = .334$	.92

Note. ERPS = emotion-related parenting styles.

<sup>a</sup>The median household income is MOP 16,000 (Department of Statistics and Census Service, 2019).

their children’s behavior than waitlist control group participants.

In terms of parenting, multiple regression results indicated that group status was significant for parenting stress ( $b = 7.02, t = 2.46, p = .014$ ) and PS-Over-Reactivity ( $b = 6.58, t = 4.32, p < .001$ ). At postintervention, intervention group participants reported lower parenting stress and over-reactivity than waitlist control group participants. However, multiple regression results were not significant for EPRS-Emotion coaching ( $b = 0.39, t = 0.86, p = .393$ ), EPRS-Parental rejection of negative emotion ( $b = 0.14, t = 0.30, p = .765$ ), EPRS-Parental acceptance of negative emotion ( $b = 0.22, t = 0.36, p = .717$ ), and EPRS-Feelings of uncertainty/ineffectiveness in emotion socialization ( $b = 0.51, t = 0.89, p = .373$ ).

Achievement of reliable change was calculated for outcome measures where there were significant group differences. Logistic regression results indicated that group differences were significant for ECBI-Intensity ( $OR = 3.32, p = .035$ ), ECBI-Problem ( $OR = 7.35, p = .014$ ), and

PS-Over-Reactivity ( $OR = 14.46, p = .012$ ). For ECBI-Intensity, a higher percentage of intervention group participants ( $n = 18.4, 32.9%$ ) were able to achieve reliable change than waitlist control group participants ( $n = 7.6, 16.2%$ ). For ECBI-Problem, a higher percentage of intervention group participants ( $n = 13.4, 23.9%$ ) were able to achieve reliable change than waitlist control group participants ( $n = 3.4, 7.2%$ ). For PS-Over-Reactivity, a higher percentage of intervention group participants ( $n = 13.8, 24.6%$ ) were able to achieve reliable change than waitlist control group participants ( $n = 1, 2.1%$ ). The results, however, were not significant for parenting stress ( $OR = 1.46, p = .574$ ).

**Per Protocol Analysis**

Among the intervention group participants, there were 44 who attended 80% or more of the sessions (seven sessions or more) with complete preintervention and postintervention data. They were compared with the waitlist control group participants who

**Table 3.** Post-intervention Outcome Scores and Effect Sizes.

Post-intervention outcome variables	Intervention Group ( <i>n</i> = 56)	Waitlist Control Group ( <i>n</i> = 47)	Reliability	Effect Size (95% CI)	Adjusted Effect Size (95% CI)
ECBI-Intensity	115.11 (24.85)	126.52 (14.02)	.95	0.55 [0.15, 0.94]	0.89 [0.47, 1.28]
ECBI-Problem	12.37 (11.00)	18.40 (12.06)	.92	0.52 [0.12, 0.91]	0.92 [0.50, 1.31]
ERPS-Emotion coaching	19.87 (2.37)	19.64 (2.23)	.61	0.10 [−0.29, 0.49]	0.31 [−0.08, 0.70]
ERPS-Parental rejection of negative emotion	16.66 (2.50)	16.50 (2.54)	.38	−0.06 [−0.45, 0.33]	−0.15 [−0.54, 0.24]
ERPS-Parental acceptance of negative emotion	17.88 (3.35)	17.59 (2.40)	.59	0.10 [−0.29, 0.48]	0.24 [−0.16, 0.62]
ERPS-Feelings of uncertainty/ineffectiveness in emotion socialization	14.32 (3.59)	14.89 (2.85)	.64	0.17 [−0.22, 0.56]	0.32 [−0.07, 0.71]
PS-Over-Reactivity	29.15 (8.91)	35.33 (7.71)	.77	0.74 [0.33, 1.13]	1.28 [0.84, 1.69]
Parenting stress	88.25 (18.71)	96.89 (17.33)	.91	0.48 [0.08, 0.86]	0.72 [0.31, 1.10]

Note. ECBI = Eyberg Child Behavior Inventory; ERPS = emotion-related parenting styles; PS = Parenting Scale.

remained in the study with complete preintervention and post-intervention data (*n* = 44). The two groups did not differ on any baseline characteristics except the position of the participants,  $\chi^2(1) = 3.88, p = .049$ . There were more participants in supervisor/manager position in the intervention group (*n* = 37, 84.1%) than the waitlist control group (*n* = 29, 65.9%). This variable was used as an independent variable in the regression analyses, in addition to group status and the respective preintervention scores.

In terms of child behavior problems, multiple regression results indicated that group status was significant for ECBI-Intensity ( $b = 12.20, t = 3.45, p = .001$ ) and ECBI-Problem ( $b = 6.11, t = 2.97, p = .004$ ). At postintervention, intervention group participants reported lower frequency of child behavior problems and were less concerned about their children's behavior than waitlist control group participants.

In terms of parenting, multiple regression results indicated that group status was significant for parenting stress ( $b = 8.37, t = 2.93, p = .004$ ) and PS-Over-Reactivity ( $b = 8.09, t = 5.84, p < .001$ ). At postintervention, intervention group participants reported lower parenting stress and over-reactivity than waitlist control group participants. However, multiple regression results were not significant for EPRS-Emotion coaching ( $b = 0.27, t = 0.57, p = .572$ ), EPRS-Parental rejection of negative emotion ( $b = 0.03, t = 0.06, p = .949$ ), EPRS-Parental acceptance of negative emotion ( $b = 0.66, t = 1.22, p = .227$ ), and EPRS-Feelings of uncertainty/ineffectiveness in emotion socialization ( $b = 0.49, t = 0.83, p = .407$ ).

Achievement of reliable change was calculated for outcome measures where there were significant group differences. Logistic regression results indicated that group differences were significant for ECBI-Intensity ( $OR = 3.98, p = .015$ ), ECBI-Problem ( $OR = 10.72, p = .004$ ), and PS-Over-Reactivity, ( $OR = 17.20, p = .008$ ). For ECBI-Intensity, a higher percentage of intervention group participants (*n* = 16, 36.4%) were able to achieve reliable change than waitlist control group participants (*n* = 7, 15.9%). For ECBI-Problem, a higher percentage of intervention group participants (*n* = 12, 27.3%) were able to achieve reliable change than waitlist control group participants (*n* = 3, 6.8%). For PS-Over-Reactivity,

a higher percentage of intervention group participants (*n* = 13, 29.5%) were able to achieve reliable change than waitlist control group participants (*n* = 1, 2.3%). The results, however, were not significant for parenting stress ( $OR = 1.72, p = .443$ ).

## Discussion and Applications to Practice

Hypothesis 1 on reduction of child behavior problems was supported. There was a significant decrease in frequency of child behavior problems and parent concern over child problem behavior in the intervention group at postintervention. A higher percentage of intervention group participants reported reliable changes in child behavior problems, compared with the waitlist control group participants. The results were consistent with the literature on the effectiveness of parenting programs in reducing child behavior problems both overseas and in Chinese communities (Barlow et al., 2016; C. Leung et al., 2017; Mingeback et al., 2018).

Hypothesis 2 on reduction in parenting stress and dysfunctional parenting practices was supported. There was a significant decrease in parenting stress and over-reactivity in the intervention group at postintervention. A higher percentage of intervention group participants achieved reliable change in PS-Over-Reactivity at postintervention than waitlist control group participants. The results were consistent with the literature on the effectiveness of parenting programs in reducing parenting stress and dysfunctional parenting practices both overseas and in Chinese communities (Barlow et al., 2014; C. Leung et al., 2016).

Hypothesis 3 on improvement in emotion coaching was not supported. The results were different from the findings of Havighurst et al. (2010) and Salmon et al. (2014). There were several possible explanations. First, emotion coaching strategies were only covered in two of the sessions, and the participants might need more input in order to fully grasp the strategies and internalize the rationale for emotion coaching. Second, the program content focused on emotion coaching strategies but might not have fully addressed the importance of natural expression of emotion, emotional independence, and parents' role in emotion socialization (S. M. Chan, 2012;



S. M. Chan et al., 2009). Future program development would need to devote more time on the importance of natural expression of emotion, emotional independence, and parents' role in emotion socialization, as well as emotion coaching strategies.

There were limited or no studies on the effectiveness of workplace-based parent training in Asian communities, and this study was a pioneer study among Chinese families. The results were similar to an Australian workplace study where there was a reduction in dysfunctional parenting practices (Sanders et al., 2011). The workplace is a convenient and effective context for the delivery of parent training program. It is much easier for working parents to participate in workplace parent training programs (Baugh et al., 2015). The support of the workplace management is vital for this mode of delivery.

This study breaks new ground in that it is designed as a workplace-based program for parents on shift work, with implications for practice. Apart from the behavior management and emotion coaching strategies, special tips were tailored made for parents on shift work. Examples designed for families with shift work parents were provided. The support of the management in making special arrangement for rostering was indispensable for the delivery of the program. This arrangement could possibly be a motivating factor for parents to attend the program as they could attend the program during their work hours.

The HPRCP program for Chinese families included components in behavior management and emotion coaching. This was a new attempt in Chinese communities. Although the results were not unequivocal, the experience gained could help in future development of such programs. Program developers might need to be more aware of the Chinese emphasis on relational emotional competence and their perception of parent's role in emotion socialization.

This workplace parent training program for parents on shift work was the result of collaboration among different sectors. The program was developed as a collaboration between tertiary institution and social services organizations, and the support of the management made it possible for this to happen. This project also involved multidisciplinary collaboration. The program was developed by educational psychologists and social workers and was delivered through a social services organization. The contribution of human resource personnel was crucial, especially in terms of the complicated rostering arrangement. Both the management and the social services organization delivering the service had to be flexible in terms of making rostering arrangement and offering programs outside office hours until 11 p.m.

There were some limitations in this study. First, as there were only two workplaces included in the study, cluster randomized controlled trial design was not possible. Contamination was possible as intervention and waitlist control participants who worked in the same workplace could have communicated about the parenting strategies taught. This might have diluted the effect of the program. Second, as the management would like to offer the program to as many employees as possible, a waitlist control group design was used. As such, it was not

possible to examine the long-term effect of the program. Third, due to the number of withdrawals and exclusions, the final sample size was less than that required for a medium effect size study. The power of the study was reduced. Fourth, the reliability estimates of some of the questionnaires were below .70. Fifth, the children's developmental status was based on parent report only. Some parents might be unwilling to report their children's developmental problems. It was possible that some of the target children might have developmental problems and the program was not specifically designed for them. Sixth, the measures of child behavior and parenting were based on participants' self-report. Information bias could not be ruled out. Finally, we did not include outcome measures on job satisfaction aspects.

Despite these limitations, this study provided important implications for social work practices. It demonstrated that parent training could be successfully delivered by program officers in social service organizations in workplace settings, including settings with shift work. The present findings highlighted the importance of management support in the workplace for the delivery of the program to parents on shift work. Targeting the workplace as an engagement strategy and providing a convenient location and special rostering arrangement were key factors to effective service delivery to parents on shift work. Flexible arrangement of the social services organizations in terms of service time to fit in with the work schedule of parents on shift work was also important.

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