



Improving Emotional Competence in Preschoolers

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Abstract

Emotional competence is a combination of emotional knowledge and emotion regulation skills. A remarkable body of research revealed that emotional competence develops through childhood. This study aims to investigate the possible facilitatory role of an educational program named Preschoolers' Affect Recognition Training (PART) on emotional competence. With the help of culture-based illustrations, PART utilizes emotion coaching, group activities, and mindfulness techniques in plays. In a pretest-posttest design, 95 children (Girls = 48), aged 3-6 ($M = 4.22$, $SD = 0.73$) participated in this study. The experimental group received 10 one-hour sessions across five weeks with a random assignment. We used the Affect Knowledge Test and the Preschool Self-Regulation Assessment as behavioural measures. The experimental group showed an improvement in emotional knowledge, $F(1, 90) = 444.43$, $p < .001$, emotion regulation, $F(1, 92) = 5715.08$, $p < .001$, and inhibitory control, $F(1, 92) = 16.06$, $p < .001$, compared to the control group ($p < .001$). Results suggest that PART has facilitatory effects on children's emotional knowledge and emotion regulation.

Keywords: Emotional knowledge; Emotion regulation; Emotional competence training; Preschooler Affect Recognition Training; Mindfulness

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1. Introduction

The construct of emotional competence is defined as a combination of emotional knowledge and emotion regulation skills (Buckley & Saarni, 2013). Emotional knowledge is the ability to understand expressions and their causes and consequences (Izard et al., 2011). On the other hand, emotion regulation is the ability to manage the quality, intensity, and duration of emotions we experience or express (Gross, 1999; Porges, 2007). From the early days of life, emotional competence and its two components start to grow, mature, and interact. During infancy, children start to soothe themselves and rely on their caregivers to reduce their stress (Denham, 1998). Although at a superficial level, they use emotion regulation strategies such as gaze aversion and head-turning. The following years of development, called preschool ages, are accompanied by the fast growth of emotional competence abilities. Preschoolers' ability to self-regulate is seen in how they shape emotional expression through play. Enhanced memory, language skills, and self-monitoring abilities occurring during this period are known to affect emotion regulation extensively. At this stage, children start to understand that others may experience different emotions from what they experience (Denham et al., 2012). These years are also a period for developing executive functions, closely related to emotion regulation and emotional knowledge (Willoughby et al., 2011).

Emotional competence in preschoolers is a prerequisite for effective interactions with peers and adults (Saklız et al., 2021; Seçer et al., 2010; Séguin & MacDonald, 2018) and plays a crucial role in academic and cognitive skills (Pahl & Barrett, 2007). Both emotional knowledge and emotion regulation were indicators of academic success and school adjustment (Graziano et al., 2007; Rhoades et al., 2011). In addition, children with higher emotional knowledge showed greater prosocial behaviours and empathy (Denham et al., 2003). Moreover, emotion regulation is associated with adaptation and resilience (Pahl & Barrett, 2007; Zolkoski & Bullock, 2012), and behavioural problems are more prevalent among children with emotion regulation difficulties (Eisenberg et al., 2010; Heleniak et al., 2016).

Regarding the facts mentioned earlier, preschool years are considered a critical stage for the emergence and shaping of emotional competence (Larmar, 2008; Pahl & Barrett, 2007). Therefore, several studies have evaluated the effectiveness of emotional competence educational programs in children. These programs could prevent problems, such as expressing maladaptive emotions, misunderstanding others, and learning failures (Bayer, 1996; Frydenberg, 2021). The promoting alternative thinking strategies (PATHS) preschool curriculum, one of these widely used programs, was developed to increase social-emotional competence, problem-solving, and self-control, as well as reducing behavioural problems. It consists of 44 lessons, taught in 7 weeks (Arda & Ocak, 2012; Domitrovich et al., 2007). The 'RULER' is another program designed to foster recognizing emotions in the self and others, conducted by teachers in schools (Rivers et al., 2013). Another program, the "EMOScope," was developed to promote socioemotional competence by increasing children's emotional self and other awareness, and also social understanding. This program was effective in enhancing children's emotional awareness and proper behaviours in social contexts (Papiéska et al., 2019). Finally, the Emotion Course (EC; Izard et al., 2004) is a 20-session program based on the theory of differential emotions (DET, Izard, 1992, 1993; Izard et al., 2004), and mainly focuses on emotion regulation.

DET suggests that both positive and negative emotions can be adaptive or maladaptive based on the situation of their appearance. In contrast to many other programs, EC attends to the physical aspects of emotion, such as muscle tension during anger (Dimaggio et al., 2017) and therefore involves physical activities for regulating emotions.

Despite previous programs' success in fostering emotional competence in preschoolers, there is still room for improvement. First, in some cases, the previous emotional competence programs could not promote inhibitory control or decrease emotional problems (Domitrovich et al., 2007; Papiéska et al., 2019). Although not categorized as a component of emotional competence, inhibitory control is closely related to emotion regulation (Carlson & Wang, 2007). Therefore an improvement in inhibitory control may affect emotion regulation.

Second, combining interventions such as mindfulness with emotional competence programs could potentially increase the facilitatory impact of these programs. Mindfulness is among the interventions recently shown to affect emotion regulation (Etherington & Costello, 2019; Ito et al., 2021). It is defined as the process of focusing attention on the present moment and experiences with a higher degree of awareness (Creswell, 2017; Linehan, 1993). It is a nonjudgemental experience, where one accepts his knowledge, emotions, ideas, and perceptions without labeling them as good or bad (Kwee, 1995). Mindfulness could enhance preschoolers' social-emotional behaviours, leading to increased Prefrontal Cortex (PFC) activity and attentional neural circuits (Flook et al., 2015). Techniques, such as focused breathing, could decrease the emotional fluctuation and the intensity of negative emotions (Arch & Craske, 2006). Another mindfulness technique, progressive muscle relaxation, is also found to reduce stress and affect emotion regulation (Esch et al., 2003). Other results showed that nonjudgmental acceptance and awareness of the present moment could enhance executive control and improve emotion regulation skills (Teper et al., 2013). Therefore, based on these findings, accommodation of mindfulness in emotion regulation training may boost inhibitory control, emotion regulation, and, consequently, emotional competence. Additionally, mindfulness techniques are also concerned with decreasing physical tension, mentioned to be essential based on the DET.

Finally, cultural factors are indicated to affect emotion regulation in children (Cole et al., 2006). Western cultures are more self-oriented in terms of behaviour and perceiving the world. On the other hand, eastern cultures are considered more collectivist, where groups' opinions and interactions are more important in how individuals perceive themselves and the world around them (Myers et al., 2021). A cross-cultural study has revealed that emotional expression is less frequent for Iranian children than for German children. Parents' social and cultural expectations were the cause of this finding. In more detail, most Iranian families expect their children to respect the collective family norms and values, and therefore Iranian children use more inhibition and suppression of emotions. In addition, while Iranian children experience emotions related to others (e.g., feeling of sadness because of not visiting grandparents; Tahmouresi et al., 2014), German children experience emotions related to themselves (e.g., feeling of sadness because of personal growth failure;). Therefore, culturally adapted programs may facilitate educating preschoolers on emotional competence.

In the current study, we aimed to design an educational program to enhance the emotional competence in 3- to 6-year-old children, named Preschoolers' Affect Recognition Training (PART).

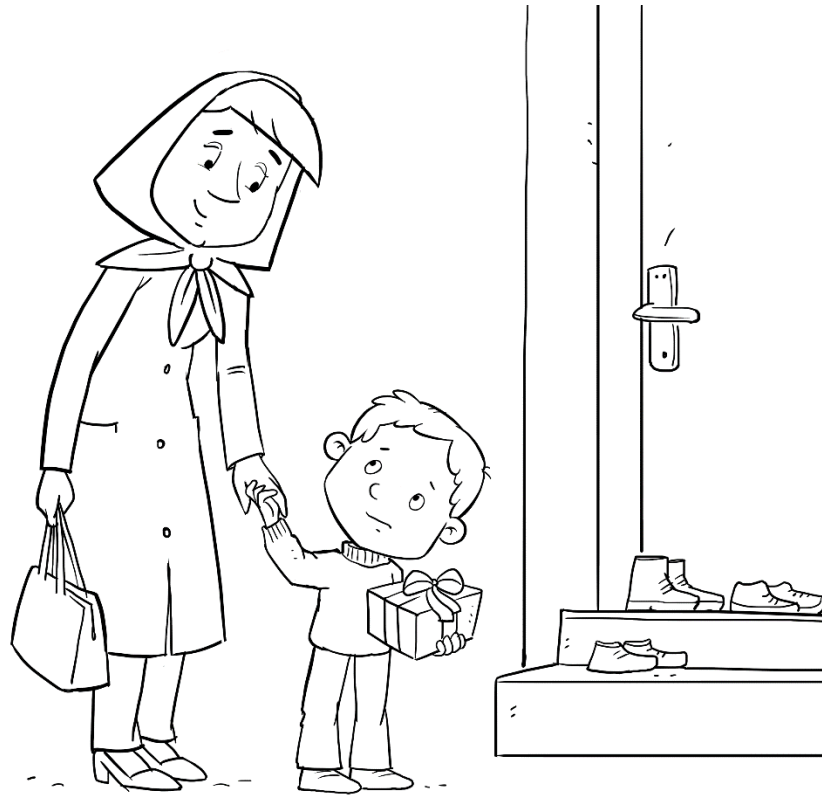
Analogous to emotional competence, the PART is constructed based on emotional knowledge and emotion regulation. Moreover, it is designed exclusively for preschoolers, using visually appealing pictures, illustrating children's characters, and incorporating mindfulness techniques in plays, and homework to enhance parent-child interactions. This program contains exercises focused on emotional knowledge (basic emotion recognition and recognition of emotions elicited by different situations) and emotion regulation skills.

PART is developed based on Saarni's emotional competence theory (2007), the process model of emotion regulation (Gross & John, 2003), and the results of mindfulness training for children (Flook et al., 2015). According to Saarni's theory (2007), discerning others' emotions is among the critical skills of emotional competence. Exercises for this skill started from the basic emotional expressions and then expanded to mixed emotions. To this end, we used cartoons and scenarios in which a character experienced an emotion, and children had to recognize that emotion using situational and expressive cues. The emotional competence theory highlights the role of social interactions in building children's emotional knowledge and emotion regulation skills. It emphasizes that understanding others' emotions guides children to adjust and regulate their forthcoming behaviour and emotions (Saarni, 2007). Therefore, PART included storytelling and role-playing strategies that provided a chance for children to understand others' emotions, predict the best response that could be given to the experienced emotion, and improve cognitive reappraisal. Finally, self-regulatory strategies were incorporated into the PART through games suitable for preschool ages. Based on the process model of emotion regulation, reappraisal is a type of cognitive change that could lead to the downregulation of emotions. Those who utilize cognitive reappraisal strategies, in comparison with expressive suppressors, were found to experience positive emotions to a greater degree and negative emotions to a lesser degree (Gross & John, 2003). Cognitive reappraisal is mostly studied in higher age groups. However, a few studies have shown that preschoolers are also using cognitive reappraisal to manage their emotions (Hua et al., 2015; Liu et al., 2019). Storytelling was used previously to assess the degree of cognitive reappraisal in preschoolers (Sala et al., 2014). We adopted and used the idea to encompass the cognitive reappraisal strategies in the PART through debates during the storytelling and recognition of situational emotions. Finally, the PART is designed based on mindfulness theory, which points to the notion that people would become conscious of their emotions by being present in the here and now (Brown et al., 2007).

We also tried to include some of the previous programs' significant contributions and expand them whenever possible. For instance, some parts of PATH, such as lessons about self-control and affect recognition, group games, and book reading sessions, are incorporated into the PART. As in the RULER and EMOScope that highlight the importance of emotional knowledge teaching, we included the teaching of basic, mixed, and situational emotions in the PART. We expanded the usage of situational emotions from understanding the cause and consequence effect of emotions to a wider area, such as presenting two contradictory emotions at the same time. Another property of the PART is the implementation of graphical illustrations instead of images or videos. This was done to diminish the cultural effects that might be influential in inferring emotions from facial expressions. Hence, pictures depicting children in emotional contexts, which were ethnic for Iranian children (e.g., park, playground), were used to prevent any confounding factor in perceiving situational emotions. Moreover, regulation activities used in the PART were carefully

designed to follow the Iranian interdependent culture and tradition. For instance, attachment to significant others (e.g., parents, grandparents, and siblings) were used to depict the characters' emotion in the PART (for an example, see Figure 1).

Figure 1 An Example of Culture-Dependent Picture Used in The PART:
Attachment to Mother, When Going to The Birthday Party Alone



Summarize, the present study's main aim was to present and examine the effectiveness of a new program to foster emotional competence in preschoolers (3 to 6 years old), named the PART. To this end, a randomized controlled trial was used, and children's scores on three measures of emotional knowledge, emotion regulation, and inhibitory control (AKT, Toy-Wrap, and Pencil-Tap) were assessed in a pretest-posttest design. The first two measures are directly related to emotional competence, while the third one is a distinct measure correlated with emotion regulation. Considering the evidence indicating the relation between emotion regulation and inhibitory control, changes in one of them could affect the other (Blair et al., 2004). As a result, this study examined both constructs using two different measures. Ultimately, we sought to explore the possible role of sex, age, and socioeconomic status (SES) on the study outcomes.

We hypothesized that participating in this educational program will effectively improve children's emotional knowledge, emotion regulation skills, and, consequently, emotional competence. In addition, we also expected an improvement in children's inhibitory control as a

related component to emotional competence. Considering the PART design, we expected the program to affect the children's skills irrespective of the demographic variables.

2. Method

Participants

Recruitment was conducted through local advertisement posters in all preschools in Neyshaboor and Tehran, Iran. A total of 102 preschoolers (girls = 52) ranging in age from 3- to 6-years ($M = 4.25$, $SD = 0.72$) enrolled in this program. After excluding those who did not participate in later stages, 95 participants remained (girls = 48), with a mean age of 4.22 ($SD = 0.73$). We obtained informed consent from the parents of each participant. All participants received a small sticker present (worth 5 U.S dollars) for their participation. There was also a 2-hour session for the parents to receive explanations about the program in more detail and to answer their questions. The study was designed and performed by the ethical principles of the Declaration of Helsinki and was approved by the Ethics Committee of the Institute for Cognitive and Brain Sciences at the Shahid Beheshti University.

Design

In a pre-test, intervention, and post-test design, we randomly assigned children into control and experimental groups using a computerized random number generator (Figure 2). The educational program was presented for the experimental group, while the control group (waitlist) did not participate in any emotion-based educational program during the study. They were told they were assigned to the waiting list and would be placed in the educational program group right after the complete administration for the first group. To avoid overcrowding, the participants were divided into different groups (groups were just different in terms of the days of attendance). Each group participated in fixed times during the week in a preschool classroom. First, the pre-test assessment was held and then one week later the intervention sessions started. The intervention lasted five weeks, with two sessions each week, each taking 1 hour. Posttest was also done a week after the end of the PART program.

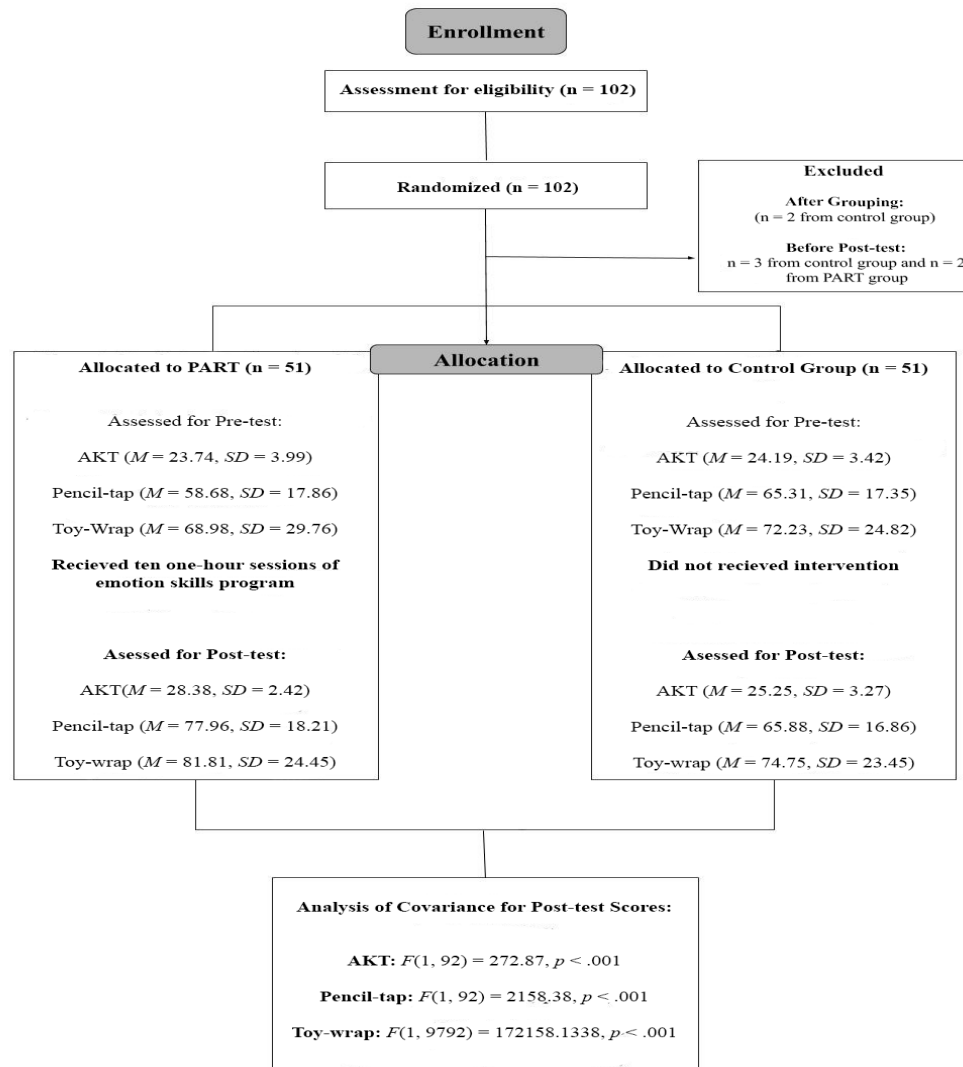
Measures

Assessments were performed by two assessors. Before starting the pre-assessment session, the assessors and the last author had two sessions to specify and determine shared guidelines on scoring and assessment rules. Moreover, several, randomly chosen assessment sessions were videotaped and double-checked by the last author, who was unaware of the participant's group. The assessors performed the behavioural and screening tests separately in two different sessions.

Screening Assessment

All participants took part in the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) linguistic subscale containing comprehension, vocabulary, and information to determine cognitive or linguistic delays. This test was validated and normalized in Iranian children (Razavieh & Shahim, 1992). All children exhibited not lower than 85 normalized scores in the linguistic WPPSI subscale. Moreover, there were no children with a medical/mental illness history or using a particular medication.

Figure 2 CONSORT Flow Diagram of The Study



Behavioural Assessment

The affect knowledge test shortened and preschool self-regulation assessment (PSRA) were used to measure emotional knowledge and emotion regulation, respectively.

Emotional Knowledge: The Affect Knowledge Test Shortened. This measure is a shortened version of the Affect Knowledge Test (AKT), used for assessing emotional knowledge, and includes two subscales (Denham, 1998). The first subscale measures the understanding of four different emotions (happy, sad, fearful, and angry). These emotions are demonstrated using puppets and detachable faces. The assessor will first ask about the puppet's emotion: "How does he/she feel?" and then the child will be asked to "give the puppet a face." The second subscale

is a situational emotion assessment. This subscale includes nine different scenarios that the examiner should play with affective vocal and visual cues using the puppets, and the child should identify the facial expression of the puppet in each story. The first three scenarios are stereotypical, eliciting the same emotions in most people (e.g., being afraid because of a nightmare). The following six scenarios are nonstereotypical, which depict situations that evoke different emotions in different children. For example, a child may get happy or sad before going to school. Before the assessment, these scenarios were explained to the parents in a separate room to record children's expected reactions in these situations. Parents filled in a questionnaire to determine their child's reactions. For instance, one of the questions was: 'Imagine that your child's sibling or peer punches him/her and threatens him/her not to tell anybody; otherwise, he/she would be punched again. How would your child mostly react? Afraid or angry?'. In the assessment phase, the assessor took the given response by parents and acted the opposite of the child's probable response. Three of these six nonstereotypical situations are positive emotions versus negative emotions, and the other three are negative emotions versus negative emotions (e.g., sadness versus anger). The children will earn two points if they recognize the correct emotion in each section. If they choose an emotion with a correct valence but not the correct emotion (e.g., anger instead of fear), they will receive one point and no point for incorrect identification. The total score for this test is 30. The inter-rater reliability was found to be .94 for this test.

Preschool Self-Regulation Assessment (PSRA). PSRA is an instrument for measuring the self-regulation ability of children (Smith-Donald et al., 2007). It involves ten tasks for assessing self-regulation. However, based on the previous findings, we just used two items of the PSRA, namely Pencil-Tap, and Toy-Wrap. These two tests were the only ones without a ceiling effect. Moreover, both have shown a high factor loading on the PSRA (Bassett et al., 2012; Susanne A. Denham et al., 2015). Toy-Wrap was used to measure emotion regulation, while Pencil-tap evaluated inhibitory control. In the Pencil-Tap task, the child should tap the pencil twice if the assessor tapped it once and tap once if the assessor taped it twice. The percentage of the correct trials over 16 trials is used for scoring. A high Cronbach's alpha of .96 was found for the inter-rater reliability. In the Toy-Wrap, the assessor wraps a toy with wrapping paper and asks the child not to look at the toy. This trial is scored by the seconds the child did not look until the first peek. An inter-rater reliability of .89 was found for this measure.

The PART

This program included ten sessions, which lasted for five weeks. Each week, there were two 1-hour sessions. The three fundamental components of the program were: the recognition of basic emotions (recognition of happiness, sadness, fear, and anger), emotion recognition in different situations (e.g., being happy at the birthday party or being sad when your pet dies), and emotion regulation. All the program basics were presented with graphical illustrations and strategies like storytelling, role-playing, and group discussion to teach emotional competence skills. At the end of each session, the trainer taught the children a playful self-regulatory technique. Figure 3 shows some parts of the program. Table 1 describes each session in detail.

Figure 3 *Examples of the Program. (a) Graphical Illustrations of Basic Emotions, (b) Graphical Illustrations About Regulating Emotions, (c) Graphical Illustrations of Situations Eliciting an Emotion*

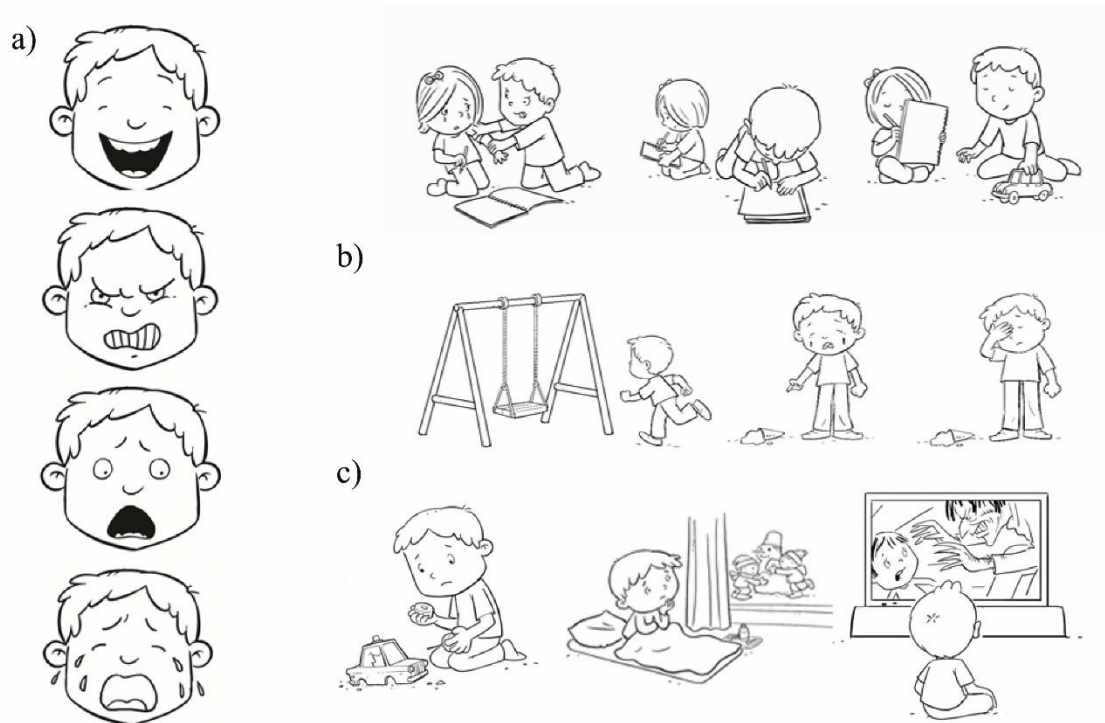


Table 1 *Components of The Preschoolers' Affect Recognition Training Program*

PART sessions	
1	Introducing and creating a good relationship between the researcher and children
2	Teaching emotion recognition of happiness and sadness based on cartoons + teaching diaphragmatic breathing (Acting like a balloon)
3	Teaching emotion recognition of fear and anger based on cartoons + teaching diaphragmatic breathing (Acting like a balloon)
4	Teaching the situations which elicit happiness and sadness based on cartoons (Three scenarios for each emotion: e.g., to be happy when daddy buys ice cream, to be sad when the toy is broken) + teaching muscle relaxation (Acting like ice cream, freezing and melting)
5	Teaching the situations which elicit fear and anger based on cartoons (Three scenarios for each emotion, e.g., to be angry when a friend does not follow the rules of a game, to be scared when watching a scary movie) + teaching muscle relaxation (Acting like ice cream, freezing and melting)

- 6 Teaching the mix emotions based on cartoons (Three scenarios, e.g., to be happy when going to a birthday party also to be sad because of leaving mommy) + self-regulation games(self-hugging)
- 7 Teaching management of sadness based on cartoons (Three scenarios, e.g., playing with toys instead of crying) + self-regulation games(self-hugging)
- 8 Teaching management of fear-based on cartoons (Three scenarios, e.g., thinking about good things) + self-regulation games(self-hugging)
- 9 Teaching management of anger based on cartoons (Three scenarios, e.g., hugging mom and talk about the feelings) + self-regulation games (mental imagery games)
- 10 Conclusion and review

Group Activities

Children were in three groups of a maximum of 10 members with the same educational content. These activities consisted of role-playing the emotions, listening to the stories regarding an emotional situation, and discussing the proper way of behaving in that situation using learned emotion regulation skills. Children role-played the expression of emotions in front of group members. Then other children were encouraged to guess the name of the emotion expressed. The next step was role-playing and guessing the emotions in dyads. In storytelling, the researcher read part of a story, and the children discussed the end of the story and the consequences of their decisions. Children were familiarized and confronted with cognitive reappraisal strategies in this way. The instructor explained how the story characters could change a negative emotion to a positive one or boost the positive emotion. Finally, the inhibitory and mindfulness-related activities were performed before closing the sessions. One of the examples of practicing inhibition was the “sit down and stand up” activity. In this activity, whenever the trainer asked children to stand up, they had to sit down and vice versa. Group mindfulness activities included group hugging, breathing, and group role-playing. For instance, the trainer asked the children to imagine that they are an ice cream inside a freezer (tensing the muscles) and then in the hot weather (relaxing the muscles) to practice muscle relaxation. Table 1 describes each session in detail.

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3	Teaching emotion recognition of fear and anger based on cartoons + teaching diaphragmatic breathing (Acting like a balloon)
4	Teaching the situations which elicit happiness and sadness based on cartoons (Three scenarios for each emotion: e.g., to be happy when daddy buys ice cream, to be sad when the toy is broken) + teaching muscle relaxation (Acting like ice cream, freezing and melting)

- 5 Teaching the situations which elicit fear and anger based on car-toons (Three scenarios for each emotion, e.g., to be angry when a friend does not follow the rules of a game, to be scared when watching a scary movie) + teaching muscle relaxation (Acting like ice cream, freezing and melting)
- 6 Teaching the mix emotions based on cartoons (Three scenarios, e.g., to be happy when going to a birthday party also to be sad because of leaving mommy) + self-regulation games(self-hugging)
- 7 Teaching management of sadness based on cartoons (Three scenarios, e.g., playing with toys instead of crying) + self-regulation games(self-hugging)
- 8 Teaching management of fear-based on cartoons (Three scenarios, e.g., thinking about good things) + self-regulation games(self-hugging)
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Emotion Coaching

During all the sessions, children were monitored to participate in group activities. The trainer (first author), with a background in pediatric occupational therapy and cognitive psychology, tried to facilitate a more generic and engaging interaction by making an enjoyable environment. Further, the trainer used some techniques (e.g., introducing the program to the children, letting children get to know each other, accepting all feelings, avoiding judgment or biased feedback, and helping children express themselves) to prevent anxiety and increase self-esteem in the group. By playing the regulatory games at the end of each session, children left the classes more relaxed, with less tension. The trainer helped children to deal with dysregulation and increase their emotional competence. If they had any difficulty in understanding the rules, the trainer explained the rules again until making sure that everybody understood the point. Even in the group activities, the trainer attempted to play with those children who had a problem as a co-player to make the children more confident.

Homework

At the end of each week, we gave homework to the parents. This homework was for the consistency of the program. Figure 4 shows a part of the homework presented in the second week. The homework described the contents of the last two sessions and had to be practiced once for one solid hour. All necessary directions were written for parents in the homework. Moreover, as a tutorial video clip, we captured the emotion regulation techniques to teach families and help them practice regulatory games better. The researchers checked the fidelity of implementing homework in the first subsequent session. The checking criteria were the amount of time spent doing the homework and completing paper and pencil tasks.

Figure 4 An Example of The Homework Presented for The Second Week of The Intervention

Show the picture to your child and ask him/her to tell you the story of it. At the end, ask your child to name the boy's emotion.



Fidelity Check

The last author verified the components of the educational program in each session. The curriculum of each session was discussed beforehand with the trainer and was checked via the videotaped parts of the educational program.

Consulting Session

At the end of the program, we provided a consultation session for parents to inform them about their child's progress. This session aimed to shape a better understanding of the program, and it was not part of the training.

Statistical Analyses

Independent t-test, chi-square analysis, and Mann-Whitney were used to compare groups at both demographic variables (age, sex, and SES) and baseline scores. This study's main goal was to determine the efficiency of the PART in improving emotion regulation, emotional knowledge, and inhibitory control. ANCOVA was used to investigate the effect of PART, using baseline scores as covariate. Two subsequent analyses were conducted to control or investigate the effect of age and sex. In this regard, age and sex were included once as covariates and once as

between-subject factors. Finally, Cohen's *d* was computed using marginal means of post-test scores. Statistical analysis was done using SPSS 25 software.

3. Results

Program Completion

Forty-nine out of Fifty-one children (96%) attended all sessions and completed pre-test and post-test measures. Two children in the PART group were excluded from the analysis due to not participating in the post-test session. Five subjects from the control group were also excluded since they did not participate in either pre-test or post-test. Two of them did not participate in the pre-test, and three were absent in the post-test. Three Mann-Whitney tests showed that there was no significant difference between those who remained in experiment and those who left the study, in terms of AKT, $U(98) = 200.5, p = .56$; Pencil-Tap, $U(98) = 226, p = .85$; and Toy-Wrap, $U(98) = 196.5, p = .51$.

Baseline Characteristics

Analysis of demographic information revealed no significant difference between two groups in terms of age, $t(93) = .73, p = .47$; sex, $X^2(1) = .27, p = .61$; and SES, including income, $U(93) = 1052, p = .54$; occupation, $U(93) = 1089, p = .75$; mother's education, $U(93) = 1064.5, p = .62$; and father's education, $U(93) = 1049, p = .55$. Descriptive statistics are presented in Table 2. Moreover, due to the random design of our study, groups were comparable in pre-test scores.

Table 2 Demographic Information of The Participants

Group	Subjects	Age	Sex	WPPSI
	<i>n</i>	<i>M(SE)</i>	Male/Female	<i>M (SE)</i>
PART	49	4.28 (.10)	26/23	105 (1.2)
Wait-List	46	4.17 (.11)	21/25	107 (1.3)

Note. There is no difference between groups in terms of age, sex and WPPSI score, ($ps > .05$)

Table 3 shows the mean and standard deviation of scores in emotional knowledge and emotion regulation.

Table 3 Mean and Standard Deviation of AKT, Pencil-Tap, and Toy-Wrap in Experimental and Control Groups

Variable	Experimental Group		Control group	
	Pre	Post	Pre	Post
	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>

AKT	23.74 (3.99)	28.38 (2.42)	24.19 (3.42)	25.25 (3.27)
Pencil-tap	58.68 (17.86)	77.96 (18.21)	65.31 (17.35)	65.88 (16.86)
Toy-wrap	68.98 (29.76)	81.81 (24.45)	72.23 (24.82)	74.75 (23.45)

Note. AKT = Affect Knowledge Test; Pencil-Tap and Toy-Wrap are two components of the Preschool Self-Regulation Assessment

The relation between scores on each pair of behavioural measures (AKT, Pencil-Tap, and Toy-Wrap) was assessed using the Pearson correlation. A significant correlation was found between AKT and Pencil-Tap, $r(94) = .44$, $p < .001$, while Toy-Wrap was not significantly correlated with AKT, $r(94) = .19$, $p = .06$, and Pencil-Tap, $r(94) = .20$, $p = .06$. Results are presented in Tables 4.

Table 4 Intercorrelations for Study Variables

Measure	1	2	3
1. AKT	-		
2. Pencil-Tap	.440***	-	
3. Toy-Wrap	.193	.196	-

Note. AKT = Affect Knowledge Test; Pencil-Tap and Toy-Wrap are two components of the Preschool Self-Regulation Assessment,

*** $p < .001$

PART's Effect on Behavioural Measures

ANCOVA was done to investigate the effectiveness of the PART program on two components of emotional competence; emotional knowledge and emotion regulation. These components were measured with AKT, Pencil-Tap, and Toy-Wrap. Post-test ratings were compared across two groups while controlling the pre-test scores. PART group significantly scored higher in all measures, including AKT, $F(1, 92) = 272.87$, $p < .001$, $\eta^2 = .46$; Pencil-Tap, $F(1, 92) = 5715.08$, $p < .001$, $\eta^2 = .33$; and Toy-Wrap, $F(1, 92) = 16.06$, $p < .001$, $\eta^2 = .15$, where the experimental group performed better in all three measures. The results are presented in Tables 5-7.

Moreover, all results remained significant after controlling age and sex. When controlling these variables, the PART group showed a higher score in AKT, $F(1, 90) = 444.43$, $p < .001$, $\eta^2 = .45$, Pencil-Tap, $F(1, 90) = 5668.26$, $p < .001$, $\eta^2 = .34$, Toy-Wrap, $F(1, 90) = 1963.29$, $p < .001$, $\eta^2 = .14$.

Table 5 ANCOVA Statistics for Affect Knowledge Test

Measure	SS	df	F	p	η^2
Group	272.87	1	48.36	< .001	.46

Baseline AKT	452.05	1	129.94	< .001	.58
Intercept	345.54	1	99.33	< .001	.52

Note. AKT = Affect Knowledge Test

Table 6 ANCOVA Statistics for Pencil-Tap

Measure	SS	df	F	p	η^2
Group	5715.08	1	45.64	< .001	.33
Baseline Pencil-Tap	17100.20	1	136.55	< .001	.60
Intercept	4454.48	1	35.57	< .001	.28

Table 7 ANCOVA Statistics for Toy-Wrap

Measure	SS	df	F	p	η^2
Group	2158.38	1	16.06	< .001	.15
Baseline Toy-Wrap	40972.15	1	304.82	< .001	.77
Intercept	7105.12	1	52.86	< .001	.36

4. Discussion

Emotional competence is essential in shaping children's social and academic skills. A growing body of research has demonstrated that there is an association between emotional competence and utilizing adaptive functioning, coping strategies, prosocial behaviour, and successful interaction with peers on the one hand and acquiring school readiness, learning, and cognitive development on the other hand (Cigala et al., 2015; Susanne Ayers Denham et al., 2012; Hernández et al., 2018). Accordingly, researchers have proposed pieces of training for facilitating emotional competence in young children with a high risk of behavioural problems (Izard et al., 2004; Webster-Stratton et al., 2004) or those who live in poor economic and educational contexts (Domitrovich et al., 2007; Finlon et al., 2015).

In the current study, we implemented a new educational program containing emotional knowledge and emotion regulation training for 3- to 6-year-old children. It was verified that this educational program was effective in improving children's emotional knowledge. Children in the PART group improved in labeling basic facial expressions and situational emotions. Moreover, emotion regulation was significantly enhanced in the experimental group compared to the control group. Moderate to large effect size was found for changes in these measures. In addition to these constructs, which are the main components of emotional competence, inhibitory control

was improved in the experimental group. Ultimately, these results were consistent even after controlling for the age and sex effects.

Using a new and culturally adopted educational program based on the main elements of emotional competence, we showed that emotional competence was improved in young children. Improved emotional knowledge through the program revealed that emotional competence training helps children to use more accurate emotion recognition skills in social situations. Recognition of facial expressions as a social cue is essential in constructing friendly relationships during childhood (Pollak & Sinha, 2002). Consequently, better emotion recognition is related to less social rejection and unfavourable behaviours (Domes et al., 2008). Interestingly, neuroimaging findings have also shown that social-emotional training induces structural as well as functional plasticity in the facial emotion-processing networks (Habel et al., 2010; Kreifelts et al., 2013).

Our results also showed a significant improvement in emotion regulation which is shown to be influenced by nonaffective aspects of the EF, such as attention and inhibitory control (Metcalf & Mischel, 1999; Murray & Greenberg, 2000). Since emotion regulation and inhibitory control are crucial for constructive behavior in challenging situations and school adjustment, we also tested inhibitory control. Conclusively, in comparison to the previous interventions (Domitrovich et al., 2007), our program influenced nonaffective cognitive functions, namely inhibitory control.

A key aspect of the PART program was the utilization of mindfulness training. Studies have shown that mindfulness interventions are effective in improving prosocial behaviour (Flook et al., 2015), executive functions (Tang et al., 2012), attention (Jha et al., 2007), and self-regulation (Poehlmann-Tynan et al., 2016) across different age groups. However, to the best of our knowledge, the PART is the first program that incorporated mindfulness training to enhance emotional competence. Mindfulness techniques are time and cost-effective and easy to learn, especially when instructed as a game for children. Focused and controlled breathing, muscle relaxation, and hugging were incorporated as games in the PART. Our results showed the feasibility of using such techniques to improve preschoolers' emotional competence. However, it should be kept in mind that we did not assess the discrete effectiveness of mindfulness activities in this study. Therefore no definite conclusion can be drawn concerning mindfulness effectiveness.

Like many other interventional programs, the implementation of PART was group-based. This allowed the reinforcement of accurate responses and behaviours. Further, working in groups provided a real opportunity for children to exercise emotional competence with their peers in a context similar to what they would encounter in their daily lives. They learned to express and regulate their emotions and recognize their and others' emotions. Children also had to learn and respect group rules that, in part, were an inhibition practice for them.

Despite the promising findings of our study, some limitations need to be improved in the future. A greater sample size may facilitate more in-depth statistical analysis to investigate the role of different moderators. Moreover, future studies may explore the effect of group training and homework separately. Another consideration for future work is to use an active control group, participating in group activities focused on nonemotional concepts. Utilizing teacher and parent ratings or assessing social competence and behavioural problems can also be considered for investigating the impact of the PART in future studies. Finally, we suggest following up with the

consistency of emotional competence improvement in future studies to assess the generalization of educated social-emotional skills in real life.

In summary, this study shows that improving skills, including recognizing basic and situational emotions, inhibiting impulsive responses, and regulating emotions, would enhance emotional competence. To the best of our knowledge, the PART is the first program that has utilized mindfulness training to promote preschoolers' emotional competence. Moreover, the PART program was developed, considering the cultural difference of the Iranian community, and was shown to be effective for eastern collectivist cultures. Parents can also use this program as helpful material to better understand their children's emotions and help them to improve their emotional skills.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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