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## Social Competence and Language Skills in Mandarin–English Bilingual Preschoolers: The Moderation Effect of Emotion Regulation

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### ABSTRACT

*Research Findings:* The main aim of this study was to examine whether language skills and emotion regulation are associated with social competence and whether the relationship between English skills and social competence is moderated by emotion regulation in Mandarin–English bilingual preschoolers. The language skills of 96 children ages 36–69 months from Australian child care centers were assessed using standardized English and Mandarin tests. Social competence was assessed using teacher reports on the Behavior Assessment System for Children–2 (BASC-2) with 4 composite scales: Externalizing, Internalizing, Behavioral Symptoms, and Adaptive Skills. Positive emotion regulation and emotion dysregulation were assessed using the disappointing gift task and teacher report on the Emotion Regulation Checklist. The results show that positive emotion regulation, emotion dysregulation, English skills, and Mandarin skills were associated with different composites of the BASC-2; the relationships between English skills and Behavioral Symptoms were moderated by positive emotion regulation; and English skills and Adaptive Skills were moderated by emotion dysregulation. *Practice or Policy:* Discussion of the results includes new considerations for a focus on emotion regulation as well as language to promote social competence in bilingual children.

*Social competence* in children is defined as a set of abilities that enables flexible and appropriate responses in social interactions (Rose-Krasnor, 1997). It is a key skill in early childhood development, as children need to manage social situations by learning from past experiences and applying them to new contexts, build positive relationships with peers and adults outside the home, and feel good about themselves (K. A. Blair, Denham, Kochanoff, & Whipple, 2004; Wentzel, 1999). It is emphasized in preschool programs as a fundamental component of school readiness and has become an integral part of evaluating preschoolers' developmental progress (C. Blair, 2002; Raver & Zigler, 1997). Children who enter kindergarten with a more positive social competence profile are more successful in early adjustment to school and have better academic achievement (Denham, 2006; Rhoades, Warren, Domitrovich, & Greenberg, 2011). Conversely, less socially competent children are more likely to experience peer difficulties, emotional maladjustment, and poor academic outcomes (Rose-Krasnor, 1997).

Success in social tasks is influenced by a child's emotional competence, which involves recognition of his or her own emotions and the ability to regulate the expression of emotions (Denham, Warren, Salisch, Chin, & Geangu, 2011). Emotion regulation is conceptualized as initiating, maintaining, or modulating one's internal feelings and physiological states often in response to external changes (Eisenberg, Fabes, Guthrie, & Reiser, 2000, 2002). It is the interface between emotions and

other psychological processes such as problem-solving abilities, attention, and concentration (Cole, Martin, & Dennis, 2004). There are two types of emotion regulation: positive emotion regulation and emotion dysregulation (K. A. Blair et al., 2004; Eisenberg et al., 2000, 2002). Positive emotion regulation enables children to use flexible and adaptive means to cope with emotions (Grolnick, McMenamy, & Kurowski, 1999). Children with a higher level of positive emotion regulation are more likely to be seen as sociable and popular among peers (Eisenberg, Fabes, Nyman, Bernzweig, & Pinuelas, 1994). Emotion dysregulation leads to children using nonconstructive means to regulate emotions, especially negative emotions such as fear, sadness, and disappointment (Dvorak, Pearson, & Kuvaas, 2013; Herndon, Bailey, Shewark, Denham, & Bassett, 2013). Children with a higher level of emotion dysregulation are prone to displaying externalizing behaviors (e.g., aggression and hyperactivity) or internalizing behaviors (e.g., anxiety, depression, and social withdrawal), and have been found to be low in prosocial behaviors (Eisenberg et al., 1994; Rydell, Berlin, & Bohlin, 2003).

In addition to the role of emotion regulation, language skills are often regarded as an important factor associated with social competence. The language ability of American children ages 37–65 months was linked to positive social behaviors as rated by teachers, observers, and peers and predicted significant variance in prosocial behaviors (Cassidy, Werner, Rourke, Zubernis, & Balaraman, 2003). Similar results also appeared among preschoolers from low-income families in the United States (Longoria, Page, Hubbs-Tait, & Kennison, 2009). American children ages 48–61 months with lower language skills had more disruptive behaviors and negative responses, fewer initiations in communications, and a shorter duration of engagement than their peers with higher language skills in preschools (Qi, Kaiser, & Milan, 2006). Among bilingual children, host language skills have been found to be positively associated with social competence. The English proficiency of Chinese Canadian children in Grades 4–8 was positively associated with peer-rated interpersonal relationships, teacher-rated social skills, and perceived self-worth (X. Chen & Tse, 2010). Recent research conducted with Australian children in early childhood found that bilinguals who were fluent in English displayed higher levels of social competence, such as more prosocial and helping behaviors and more physical independence (Goldfeld, O'Connor, Mithen, Sayers, & Brinkman, 2014). In contrast, those who were not proficient in English were more likely to be lower in social competence, such as displaying anxious, fretful, and aggressive behaviors and being inattentive and hyperactive. Similar results appeared among children from Asian and Latino backgrounds in the United States (Han, 2010; Han & Huang, 2010). Those who were proficient in English had higher levels of teacher-rated approach to learning, self-control, and interpersonal skills, whereas those who were not proficient in English had higher levels of externalizing and internalizing behaviors.

It is now well established that bilingualism can lead to some developmental advantages, particularly inhibitory control, which is promoted by the need to suppress a competing language in order to communicate effectively. The first clear example came from Bialystok's (1999) work, which showed that Chinese–English bilingual children ages 5–6 years performed better than monolingual counterparts at problem-solving tasks that required control of distracting information. Since then, studies have shown a range of advantages for bilingual children in cognitive domains (Bialystok & Martin, 2004; Sabbagh, Xu, Carlson, Moses, & Lee, 2006). Building on this body of work, some researchers have demonstrated advantages in social development. For example, it has been demonstrated that bilingual preschoolers are more sensitive to ambiguous referential cues than monolingual children (Yow & Markman, 2011). The authors argued that the advantage may be partly due to better inhibitory control, but more likely the advantage is attributable to the self-generated efforts of bilingual children to communicate effectively with others and avoid communicative breakdown.

Bilingual children's heritage language skills are also found to be positively associated with social competence. A study with bilingual preschoolers from Latino backgrounds in the United States found that children who were proficient in the heritage languages but limited in English were rated by teachers as having a similar level of social competence as children who spoke English fluently

(Oades-Sese, Esquivel, Kaliski, & Maniatis, 2011). Some researchers have found that proficiency in heritage languages was positively associated with self-esteem and family relationships (Portes & Hao, 2002; Tseng & Fuligni, 2000). Moreover, given that many preschoolers from immigrant families only speak the heritage language and have little exposure to English on attending child care (Soltero-Gonzalez, 2009), they may use the heritage language at times for social interactions in child care settings (Clarke, 2009). Therefore, it might be expected that heritage language is positively associated with social competence, though it alone may not be sufficient for the development of social competence.

The studies reviewed here indicate that both abilities to regulate emotions and language skills are related to social competence. However, it is still unknown how emotion regulation interacts with host language skills in predicting bilingual children's social competence. It is likely that the contribution of host language skills is enhanced or inhibited by abilities to regulate emotions in social situations. For example, positive emotion regulation is likely to enable a child to find alternative pathways for successful communication, reducing dependency on fluency in the host language. Emotion dysregulation is likely to exacerbate the consequences of a communication error if the child uses nonconstructive means, such as lapsing into a sullen silence or throwing a tantrum, to resolve the problem.

Interactions between language skills and emotion regulation in predicting social competence were tested by Monopoli and Kingston (2012) among children ages 6–8 years. However, instead of testing moderation, they tested the mediation effect (i.e., functioning as a go-between factor) of language skills between positive emotion regulation and social competence and between emotion dysregulation and social competence. Their results showed that positive emotion regulation and language skills were positively associated with social competence and that emotion dysregulation was negatively associated with social competence. Nevertheless, language skills did not have a mediation effect. Their failure to detect the mediation of language skills may have been because their assumption was incorrect (for the difference between moderation and mediation, see Baron & Kenny, 1986). Because positive emotion regulation, emotion dysregulation, and English independently predict social competence, it may be more likely that positive emotion regulation and emotion dysregulation would moderate the relationship between English and social competence.

Investigating emotion regulation as a moderator among bilingual children is not just a theoretically interesting question. Large-scale global migration means that each year, children go into educational contexts ill equipped to take advantage of the curricula and potentially exposed to adverse social circumstances such as isolation from peers. Although some early childhood centers and schools may be able to support rapid gains in the new language, this may not always be the case. Teachers and other professionals working with these children may be able to support emotion regulation to promote social adjustment.

By focusing on Mandarin-speaking preschoolers in Australia, the present study tested the relationships among social competence, emotion regulation, and language abilities. We hypothesized that (a) positive emotion regulation would be positively associated with social competence, whereas emotion dysregulation would be negatively associated with social competence; (b) English skills and Mandarin skills would be positively associated with social competence; and (c) positive emotion regulation and emotion dysregulation would moderate the relationship between English skills and social competence.

## Methods

### *Participants*

Participants in the present study were 96 children who spoke Mandarin as a first language at home. They were all typically developing children without serious chronic health problems or mental retardation. The children were recruited from 15 child care centers located in the metropolitan

area of Sydney, Australia, and ranged in age from 36 to 69 months ( $M = 52.07$ ,  $SD = 8.45$ ). There were 53 boys (age range = 36–66 months,  $M = 52.87$ ,  $SD = 8.78$ ) and 43 girls (age range = 39–69 months,  $M = 51.09$ ,  $SD = 8.03$ ). A total of 35 were first generation (born overseas) and 61 were second generation (born in Australia with at least one parent born overseas). Attendance at an English-speaking child care ranged from 2.86 to 57.01 months ( $M = 20.90$ ,  $SD = 11.11$ ). Parents ethnicities were both Chinese ( $n = 94$ ), Chinese and Taiwanese ( $n = 1$ ), Chinese and Malaysian Chinese ( $n = 1$ ). The primary caregivers were mother ( $n = 39$ ), mother and father ( $n = 38$ ), grandparent ( $n = 15$ ), mother and grandparent ( $n = 2$ ), and father ( $n = 2$ ). Finally, 75% of the primary caregivers had a bachelor's degree or higher.

## Measures

### Social competence

The Teacher Rating Scales of the Behavior Assessment System for Children–2 (BASC-2; Reynolds & Kamphaus, 2004) for 2- to 5-year-olds was used to assess social competence. The BASC-2 contains four composites: Externalizing (undercontrolled behaviors), Internalizing (overcontrolled behaviors), Behavioral Symptoms (overall problem behaviors), and Adaptive Skills (emotional understanding, daily living skills, and communicative competence). Cronbach's alpha for the overall scale was .89 in the present study. Prior studies have reported good reliability and validity of the BASC-1 and BASC-2 and suitability for use with Chinese children (Monopoli & Kingston, 2012; Zhou, Peeverly, Xin, Huang, & Wang, 2003).

### Positive emotion regulation and emotion dysregulation

Two measures were used to assess children's positive emotion regulation and emotion dysregulation: the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997) and the disappointing gift (DG) task (Saarni, 1984). The ERC and the DG measured different aspects of emotion regulation, and the combined score provided a more comprehensive measure than either measure alone. In the present study, positive emotion regulation and emotion dysregulation were derived from different scores of the ERC and the DG. The ERC is a 24-item checklist and is rated on a 4-point Likert scale from 1 (*never*) to 4 (*almost always*). It has two subscales: Emotion Regulation and Lability/Negativity. The former is used to assess empathy, equanimity, and emotional understanding and the latter emotional intensity and mood lability. The child care teachers completed the ERC in the present study, and Cronbach's alpha was .72. The ERC has been found to be appropriate for use with Chinese children (Chang, Schwartz, Dodge, & McBride-Chang, 2003; Xu & Zhang, 2008). The DG task was used as a behavioral measure of emotion regulation. The first author conducted the DG task in Mandarin, as this was the children's and the first author's preferred language. Prior to the administration of the Mandarin test (see "Mandarin Proficiency") in the child care center, the child was told that he or she would receive "很酷的礼物" [a very cool gift] as a prize for completing the test. When the test was finished, the child was offered a box containing a scrap of wood and was asked to open it to get the gift. One minute after exposure to the wood, the assessor pretended to realize that he had brought the wrong gift and then presented a package of desirable gifts and asked the child to choose one. The whole procedure was video-recorded for 3–5 min. Emotional responses to the DG are coded into three categories: positive, negative, and transitional (Saarni, 1984). Cronbach's alpha for the DG task in the present study was .61. The DG task has been widely used to assess young children's emotion regulation (Carlson & Wang, 2007; Johnson, Walden, Conture, & Karrass, 2010; Saarni, 1984). With the two measures of the ERC and the DG, we created a positive emotion regulation score and an emotion dysregulation score for each child after the DG was coded (see "Coding of DG"). Positive emotion regulation was generated by adding the Z scores of ERC Emotion Regulation and the DG positive category. Emotion dysregulation was formed by adding the Z scores of ERC lability/negativity and the DG negative category.

### **English proficiency**

The Preschool Language Scales, Fifth Edition, Screening (PLS-5 Screening; Zimmerman, Steiner, & Pond, 2012) is a standardized screening criterion developed to assess auditory comprehension and expressive communication in English. It is an individually administered test for children from birth to 7 years. The PLS-5 Screening rather than the PLS-5 was used for the present study because the administration of the PLS-5 takes 45 to 60 min, which child care teachers indicated to be an unacceptably long period for most participants when combined with the other testing required for our study. The PLS-5 Screening takes 6–10 min per child. It includes the most discriminating test items from the PLS-5 and is used to identify children who need further assessment (Zimmerman et al., 2012). The test has different forms designed for different age ranges. This present study used three forms (3, 4, and 5 years) according to the participants' ages. Cronbach's alphas for the three forms in the present study were .88, .87, and .79. The test was administered in the child care centers by a research assistant who was a native English speaker with early childhood education qualifications.

### **Mandarin proficiency**

The Receptive and Expressive Vocabulary Test (REVT; Huang, Jian, Zhu, & Lu, 2010) is a norm-referenced measure assessing the Mandarin proficiency of children ages 3–6 years. It is implemented individually and assesses expressive and receptive skills in four areas of nomination, classification, definition, and reasoning. Each age range has its own test form, and our study used three forms (3, 4, and 5 years) according to the participants' ages. Cronbach's alphas for the three forms in the present study were .95, .98, and .97. The test has high criterion validity when compared with the Chinese version of the Wechsler Preschool and Primary Scale of Intelligence (Huang et al., 2010). The REVT was administered in the child care centers by the first author, who is a native Mandarin speaker with extensive language testing and early childhood research experience.

### **Procedures**

Child care centers were identified online through local councils. Directors of the centers were then contacted and, if they were willing to participate, consent forms and demographic questionnaires were provided to the centers to pass on to Mandarin-speaking parents. The REVT (with the DG) and the PLS-5 Screening were administered to each child in two separate testing sessions to minimize fatigue factors. A total of 21 teachers from the 15 centers also participated in providing ratings on the BASC-2 and the ERC. Of the 21 teachers, five spoke fluent Mandarin, four had a basic functional use of Mandarin, and the rest had no use of Mandarin. One teacher was male. Other demographic information, such as teachers' age, ethnicity, highest educational degree, and years working in childhood care, was not available. Nevertheless, all teachers had a certificate in early childhood education as a minimum required by the state government, and all had experience teaching Mandarin-speaking children because the teachers' consent forms showed that Mandarin-speaking children made up 25% to 40% of the overall children across the 15 centers. Conversations with child care directors indicated that all centers also had children from other ethnic and immigrant backgrounds. The teachers were compensated for their time with 10 Australian dollars per child rated.

### **Coding of DG**

The first author conducted the coding after receiving training from a developmental psychologist who was experienced in coding the DG procedures. The coding system developed by Saarni (1984) was used in the present study. Because Saarni's coding system was used with Western children, using it with Chinese children required additional vigilance. Unlike Saarni, who coded the Western sample for 10–15 s, the present study followed the amendment made by Garrett-Peters and Fox (2007) for Chinese children and coded each child for 30–40 s following exposure



of the DG until the child finished reacting to the DG. The rationale behind this longer coding period was to allow Chinese children sufficient response time given previous reports of behavioral inhibition and longer response latencies in Chinese children (X. Chen et al., 1998; Garrett-Peters & Fox, 2007). Every case was coded three times consecutively for correctness. An early childhood teacher who was also a PhD candidate and a native Mandarin speaker coded 25% of the sample selected randomly after receiving training for coding. Satisfactory Cohen's kappas were obtained, ranging from .66 to .79. Saarni's coding system classifies all possible responses into three categories: positive, negative, and transitional. The positive and negative behaviors represent those that are obviously positive or negative, such as smiling at the researcher or frowning. The positive category is equivalent to ERC Emotion Regulation, and the negative category is equivalent to ERC Liability/Negativity. Each behavior that appeared was coded as 1 point and added to the positive or negative sum. Transitional behaviors were also coded but were not used for analysis in the present study.

## Results

In our analysis plan, we first computed descriptive statistics and bivariate correlations. Then we estimated hierarchical regression equations to test the effects of emotion dysregulation, positive emotion regulation, English, and Mandarin on the four social competence composites after controlling the effects of the demographic factors of age, gender, generational status, and primary caregiver's education. Finally, we conducted hierarchical regressions to test the moderation effect of emotion regulation on the relationships between English skills and the four social competence composites.

### *Descriptive statistics and bivariate correlations*

The mean scores and standard deviations of Externalizing, Internalizing, Behavioral Symptoms, and Adaptive Skills in Table 1 indicated that the children in our sample were rated close to the normative sample of the BASC-2, which has a mean score of 50 and a standard deviation of 10. Furthermore, a one-sample *t* test showed that there were no statistical differences in the four composites between the present sample and the normative BASC-2 sample (the statistical outcomes are not presented here). This result indicated that the present sample did not have cultural differences in behavioral expressions, such as having more internalizing behaviors than Western children (see X. Chen et al., 1998). Because of this, the following analyses did not control cultural differences as a confounding variable. Because we used Z scores, the means of emotion dysregulation and positive emotion were zero. The score ranges of Mandarin and English indicated that some children scored full marks whereas others displayed limited proficiency in either language. Because the REVT was not previously used with Chinese Australian children and the PLS-5 Screening was not used for diagnostic purposes, the participants in our study who displayed limited proficiency on either test

**Table 1.** Descriptive statistics.

Variable	M	SD	Min	Max
Externalizing	50.01	9.19	41.00	83.00
Internalizing	51.07	10.24	37.00	89.00
Behavioral Symptoms	50.33	9.87	37.00	85.00
Adaptive Skills	49.34	9.05	33.00	68.00
Emotion dysregulation	0.00 <sup>a</sup>	1.62	-2.55	4.40
Positive emotion regulation	0.00 <sup>a</sup>	1.61	-4.22	4.23
English	62.34	21.32	100.00	0.00
Mandarin	96.97	17.72	134.00	66.00

Note. *N* = 96.

<sup>a</sup>Emotion dysregulation and positive emotion regulation used Z scores.

**Table 2.** Bivariate correlations.

Variable	1	2	3	4	5	6	7	8
1. Externalizing	—							
2. Internalizing	.38***	—						
3. Behavioral Symptoms	.81***	.51***	—					
4. Adaptive Skills	-.37***	-.11	-.58***	—				
5. Emotion dysregulation	.69***	.40***	.63***	-.41***	—			
6. Positive emotion regulation	-.37***	-.28**	-.59***	.66***	-.57***	—		
7. English	-.21*	-.15	-.38***	.42***	-.28**	.38***	—	
8. Mandarin	-.10	.20*	-.13	.22*	.05	.20*	.08	—

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

were still included in all analyses. There were no obvious indicators showing that they had hearing, visual, cognitive, or psychiatric deficits.

The bivariate correlation results (Table 2) indicated that the BASC-2 composite scales Externalizing, Internalizing, and Behavioral Symptoms correlated positively with one another. Adaptive Skills correlated negatively with Externalizing and Behavioral Symptoms. Emotion dysregulation correlated negatively with Adaptive Skills but positively with Externalizing, Internalizing, and Behavioral Symptoms. Positive emotion regulation correlated negatively with Externalizing, Internalizing, Behavioral Symptoms, and emotion dysregulation but positively with Adaptive Skills. English correlated negatively with Externalizing, Behavioral Symptoms, and emotion dysregulation but positively with Adaptive Skills and positive emotion regulation. Mandarin correlated positively with Internalizing, Adaptive Skills, and positive emotion regulation.

### ***Emotion regulation, English, and Mandarin as predictors of social competence***

We conducted hierarchical regressions of the four BASC-2 composites from Step 1, the demographic factors, including gender, age, generational status, and primary caregiver's education; and Step 2, the main predictors of emotion dysregulation, positive emotion regulation, English, and Mandarin. In Step 1, primary caregiver's education was categorized into two levels—below bachelor's versus bachelor's and higher—because there was no big variance in this variable and the majority (75%, as mentioned in "Participants") had a bachelor's degree or higher. In Step 2, the main predictors were entered in one step rather than in more steps because they were at the same level predicting social competence independently as previously argued. The overall effects of the demographic factors in Step 1 were significant only for Externalizing and Behavioral Symptoms,  $F(4, 91) = 2.47$  and  $2.78$ ,  $R^2 = .10$  and  $.11$ ,  $ps < .05$ . Among the demographic factors, only gender was significant ( $\beta = .25$  and  $.21$ ,  $SE = 1.84$  and  $1.97$ ,  $t = 2.54$  and  $2.12$ ,  $ps < .05$ ). That is, boys had higher levels of Externalizing and Behavioral Symptoms than girls. After we controlled the effects of demographic factors, the overall effects of the main predictors of emotion dysregulation, positive emotion regulation, English, and Mandarin in Step 2 were all significant,  $\Delta F(4, 87) = 16.91, 6.84, 20.01, \text{ and } 16.75$ ;  $\Delta R^2 = .40, .22, .43, \text{ and } .40$ ;  $ps < .001$ , for Externalizing, Internalizing, Behavioral Symptoms, and Adaptive Skills, respectively. The effects of the individual main predictors are listed in Table 3. The results partially supported the hypothesis that emotion regulation was associated with social competence. Emotion dysregulation was associated positively with Externalizing, Internalizing, and Behavioral Symptoms. Positive emotion regulation was associated positively with Adaptive Skills but negatively with Behavioral Symptoms.

The hypothesis that English would be associated with social competence was partially supported. English scores were positively associated with Adaptive Skills and negatively associated with Behavioral Symptoms. Contrary to our hypothesis that Mandarin would be associated with social competence, Mandarin scores were positively associated with Internalizing.



**Table 3.** Main effects of emotion dysregulation, positive emotion regulation, English, and Mandarin in predicting social competence composites.

Variable	$\beta$	SE	t
<b>Externalizing</b>			
Emotion dysregulation	.71	.56	7.24***
Positive emotion regulation	.09	.56	0.81
English	-.01	.04	-0.12
Mandarin	-.08	.04	-1.07
<b>Internalizing</b>			
Emotion dysregulation	.32	.74	2.72**
Positive emotion regulation	-.11	.79	-0.86
English	-.13	.05	-1.22
Mandarin	.27	.06	2.88**
<b>Behavioral Symptoms</b>			
Emotion dysregulation	.42	.57	4.60***
Positive emotion regulation	-.29	.62	-2.82**
English	-.18	.04	-2.04*
Mandarin	-.05	.04	-0.71
<b>Adaptive Skills</b>			
Emotion dysregulation	-.06	.56	-0.56
Positive emotion regulation	.55	.60	5.09***
English	.20	.04	2.23*
Mandarin	.09	.04	1.15

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

### **Emotion regulation as a moderator**

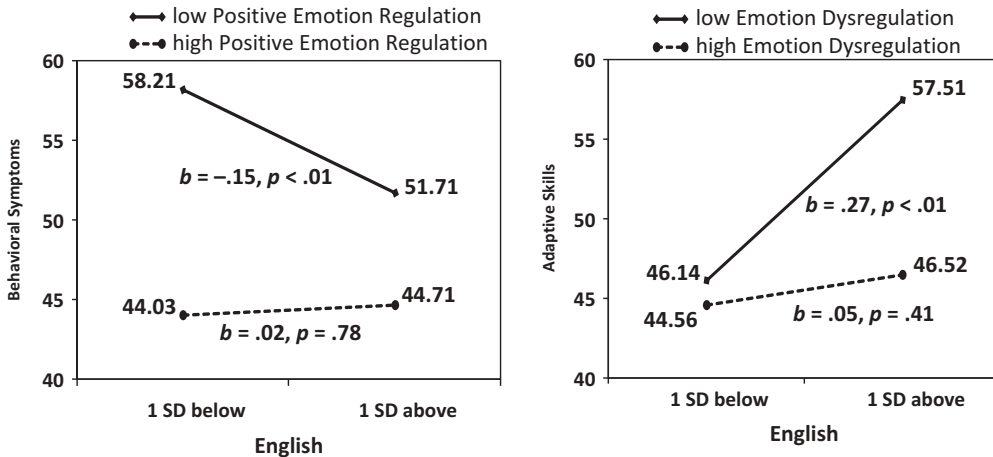
Because gender was significant in predicting Externalizing and Behavioral Symptoms and Mandarin was significant in predicting Internalizing, the two factors were controlled when we tested the moderation effect of emotion regulation. Hierarchical regression equations were estimated in these outcome variables from Step 1, gender (or Mandarin); Step 2, emotion dysregulation, positive emotion regulation, and English; and Step 3, Emotion Dysregulation  $\times$  English and Positive Emotion Regulation  $\times$  English. For the outcome variable Adaptive Skills, there were only two steps in the regression because no demographic factor or Mandarin had an effect on it. The results are shown in Table 4. For Externalizing, none of the predictors were significant except for emotion dysregulation. Neither interaction was significant. The full regression equation explained 48% of the total variance in Externalizing. For Internalizing, Mandarin and emotion dysregulation were significant. Neither interaction was significant. The full regression equation explained 22% of the total variance in Internalizing. For Behavioral Symptoms, gender was significant in Step 1. Emotion dysregulation and positive emotion regulation were significant in Step 2. The Positive Emotion Regulation  $\times$  English interaction was significant. The full regression equation explained 53% of the total variance in Behavioral Symptoms. For Adaptive Skills, emotion dysregulation in Step 2 and positive emotion regulation and English in both steps were significant. The Emotion Dysregulation  $\times$  English interaction was significant. The full regression equation explained 50% of the total variance in Adaptive Skills.

Post hoc probing of the moderation effect was conducted among the two significant interactions with the procedures developed by Baron and Kenny (1986) and Holmbeck (2002). The results indicated that positive emotion regulation moderated the relationship between English and Behavioral Symptoms and that emotion dysregulation moderated the relationship between English and Adaptive Skills (see Figure 1). Increased English proficiency was associated with decreased Behavioral Symptoms only when positive emotion regulation was low (1 SD below the mean;  $b = -.15$ ,  $p = .009$ ), and English proficiency was not associated with Behavioral Symptoms when positive emotion regulation was high (1 SD above the mean;  $b = .02$ ,  $p = .78$ ). Increased English proficiency was associated with increased Adaptive Skills only when emotion dysregulation was low (1 SD below the mean;  $b = .27$ ,  $p < .001$ ), and English proficiency was not associated with Adaptive Skills when emotion dysregulation was high (1 SD above the mean;  $b = .05$ ,  $p = .41$ ).

**Table 4.** Standardized coefficients and explained variance for hierarchical regression equations predicting the social competence composites.

Variable	Externalizing			Internalizing			Behavioral symptoms			Adaptive skills		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Gender	.24*	.06	.04	.20*	.25*	.20*	.20*	.02	-.002			
Mandarin												
Emotion dysregulation		.69***	.72*		.33**	.97**		.41***	.17		-.04	.61*
Positive emotion regulation		-.04	-.48		-.14	.36		-.30**	-.13		-.56***	.69*
English		-.02	-.01		-.02	.01		-.15	-.13		.19*	.23**
Emotion Dysregulation × English			-.03			-.67			.26			-.68*
Positive Emotion Regulation × English			.52			-.54			.67*			-.16
$\Delta R^2$	.06*	.42***	.03	.04*	.18***	.03	.04*	.49***	.04*	.47***	.03*	.03*
$\Delta F$	5.60	27.51	3.10	4.05	7.17	1.88	3.88	26.93	3.50	26.73	3.06	3.06

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



**Figure 1.** Simple slopes for the statistical prediction of social competence from English at low (1 SD below) and high (1 SD above) levels of positive emotion regulation and emotion dysregulation.

## Discussion

To date, research on bilingual children's social competence in English-speaking countries has mainly focused on its associations with English skills and heritage language maintenance (S. H. Chen et al., 2014; Han, 2010; Han & Huang, 2010; Luchtel, Hughes, Luze, Bruna, & Peterson, 2010). Little is known about whether emotion regulation is also associated with social competence and whether emotion regulation moderates the relationship between English skills and social competence among bilingual children. Our results indicate that positive emotion regulation, emotion dysregulation, English skills, and Mandarin skills were associated with different aspects of social competence and that positive emotion regulation and emotion dysregulation moderated the relationships between English skills and different aspects of social competence among bilingual children.

### *Emotion regulation and social competence*

Emotion dysregulation was positively associated with externalizing behaviors, internalizing behaviors, and behavioral problems; positive emotion regulation was associated negatively with behavioral problems and positively with adaptive skills. These findings are not completely consistent with previous studies (Cohen & Mendez, 2009; Monopoli & Kingston, 2012), which found that both types of emotion regulation were strongly associated with all composites of the social competence measure. The reason for such a difference is that Cohen and Mendez (2009) made their conclusions based on bivariate correlation results, and Monopoli and Kingston (2012) regressed social competence composites each time on a single predicting variable. Neither study considered the effects of other predicting variables.

It is not surprising that the emotion regulation of the bilingual children in our study was associated with their social competence. The children are likely to be exposed to various challenges. Besides English difficulties, they may have other challenges, such as experiencing a transitional stage from home to new educational settings and unfamiliarity with new child care routines and activities (Clarke, 2009). They may also receive failure feedback from teachers and feel negative emotions such as fear and sadness (Han & Huang, 2010). Dysregulation of these negative emotions could lead to various behavioral problems and impair children's abilities to successfully negotiate in educational settings (Herndon et al., 2013). In contrast, the children who used positive means to regulate negative emotions may have displayed fewer behavioral problems and established better

relationships with peers and teachers. Previous work has largely investigated Western children without an immigrant focus (Cohen & Mendez, 2009; Eisenberg et al., 2000; Monopoli & Kingston, 2012), whereas our study extends to children from immigrant families.

### ***English and social competence***

Our findings indicate that English played an important role among the children who had difficulties regulating emotions positively and among the children who rarely dysregulated emotions. Among the first group, their limited English was associated with behavioral problems. This is not surprising, as inadequate English may have caused communication difficulties, such as not correctly understanding teachers' instructions and peers' words and not clearly conveying one's own ideas. Communication difficulties may have increased the likelihood of negative emotions, which, if not handled appropriately, were likely to end in behavioral problems. Among the second group, their increased English skills were linked to an increase in adaptive skills. This is again anticipated, as good English can be a protective factor. If the children did not always regulate their emotions in a negative manner, their advanced English was likely to help them adjust well in child care by pleasantly engaging in peer play and enjoying interpersonal exchanges.

### ***Mandarin and social competence***

Contrary to our expectation that Mandarin skills would be associated with social competence, our study finds that Mandarin skills were positively associated with internalizing behaviors. The exact reason for such an association is not known. A possibility is that the children who spoke more Mandarin may not have been well accepted or may even have been rejected by their English-speaking peers. Rejection can be the direct cause of internalizing behaviors of anxiety and loneliness (Bierman, Kalvin, & Heinrichs, 2015). However, given previous studies with school-age immigrant children that showed that fluency in the heritage language had benefits for self-worth (Bialystok & Martin, 2004; Han & Huang, 2010) and that self-worth helped reduce internalizing behaviors (McDonald et al., 2005), the association between Mandarin and internalizing behaviors in the present study requires caution. There may be a moderating effect from a third variable. For example, authoritarian parenting practices, which Chinese families are likely to adopt, have been found to be associated with internalizing behaviors (Nelson et al., 2006). The association may have happened briefly when the children changed their settings from home to child care and from speaking Mandarin to speaking English. Note that our bivariate correlations (see Table 2) show that Mandarin correlated positively with positive emotion regulation. Prior work showed that positive emotion regulation helps reduce internalizing behaviors among preschoolers (Eisenberg et al., 2001). All of these further suggest that the association between children speaking Mandarin and displaying internalizing behaviors is temporary and may disappear quickly. Longitudinal research is warranted for confirmation.

### ***The moderating effect of emotion regulation***

An important finding of our study is that positive regulation of emotions moderated the relationship between English skills and behavioral problems. For the children who had poor abilities to regulate their emotions positively, limited English was linked to more behavioral problems, whereas advanced English was associated with fewer behavioral problems. However, for the children who were better at regulating their emotions positively, English was not related to the variance in behavioral problems, no matter how advanced the language was. All of this suggests that positive emotion regulation appears to be a robust protective factor against the effect of limited English. Children with limited English are likely to experience native emotions such as shyness (X. Chen & Tse, 2010), but if they can effectively appraise the social context and act accordingly, they may not display serious

behavioral problems. Previous studies with bilingual children showed that limited English was associated with behavioral problems (Goldfeld et al., 2014; Han & Huang, 2010). Our finding suggests that children with limited English skills may not display behavioral problems if they can regulate their emotions positively.

Another important finding of our study is that emotion dysregulation moderated the relationship between English and adaptive skills. For the children who did not dysregulate their emotions, limited English was associated with fewer adaptive skills, whereas advanced English was associated with more adaptive skills. However, for the children who dysregulated their emotions, adaptive skills did not vary with the increase in English skills. This finding suggests that emotion dysregulation has a strong negative effect on children's social life in child care. It is likely to reduce or even deplete the possible benefits advanced English might bring to adjustment to new environments. Although previous studies with bilingual children showed that English skills were linked to adjustment, such as sociability, positive peer relationships, and self-control (X. Chen & Tse, 2010; Han, 2010; Oades-Sese et al., 2011), our finding suggests that English skills are positively linked to social adjustment when children do not regulate emotions in a negative manner. It seems that for young children to successfully engage in interpersonal exchanges and form positive peer relationships with others in child care, they need both good English skills and sound abilities to avoid emotion dysregulation.

### **Limitations and implications**

There are three main limitations in our study. First, the PLS-5 Screening used for measuring English proficiency may not have been able to capture all important aspects of English skills. Future research should consider using a more comprehensive test of English to confirm the findings presented in our study. Second, there may be some inherent shared variance between the ERC and the BASC-2, and both forms were completed by the same informant. Nevertheless, we also had a direct behavioral assessment of emotion regulation through the DG task. Third, our study was cross-sectional, and causal relationships between the constructs cannot be established. English skills and abilities to regulate emotion positively may result in high social competence ratings. It is also possible that social-emotional functioning serves as an important foundation for learning and making additional contributions to language outcomes (Gillanders, 2007). To determine causality and the possible magnitude of the associations between these constructs, a longitudinal design is recommended in later research.

The results of this study have several important implications. First, teachers and parents need to remember that emotion regulation plays a very important role in the development of social competence. Emotion regulation also changes the relationship between English proficiency and social competence. Teachers and parents need to consider from an emotional perspective to intervene if children display behavioral problems and social maladjustment. Second, teachers and parents need to know that lack of proficiency in English may not only result in communication difficulties but also impact behavioral development and adaptive skills negatively, especially among children who have difficulties regulating emotions appropriately. To avoid negative outcomes, teachers and parents need to consider necessary actions and provide more opportunities to improve English skills. Third, teachers and parents need to know that speaking a heritage language may result in internalizing behaviors in child care, but they may not need to overreact to this association and overlook the possible advantages, such as family cohesion and self-worth, that the heritage language may bring forth (Bialystok & Martin, 2004; Winsler et al., 2014).

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