

Mindfulness of Migrant Children in China: A Daily-Life Approach to Better Academic Performance

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Abstract

Mindfulness emphasizes the awareness of the “here-and-now”. Studies found that mindfulness can affect positive change in behavior in children and adolescents. However, as an emerging field, the approaches and effects of mindfulness practice have not been well elaborated in previous studies. This paper examines the relation between mindfulness and academic performance of migrant children in China, and, explores the roles of executive function in this relation. Our findings validate the positive effects of mindfulness on executive function, which links to better academic performance.

This study adds empirical evidence to the roles of mindfulness in child development. It sheds lights on the effects of mindfulness on Chinese migrant children’s executive function and academic performance. The findings provide implications for future intervention strategies, school curriculum advancement, and potential research topics to promote the educational outcomes of migrant children in China and beyond.

Introduction

Mindfulness, an awareness of focusing on what we are doing while we are doing it and feeling what is happening while it is happening, has become an emerging approach to greater individual well-being (Collard, 2014). Mindfulness is found to affect positive change in behavior, emotion, and social relationship of children and adolescents. It makes children better concentrate, more confident, and kinder to themselves and others (Snel, 2013). It relieves their stress, depress, anxiety, and other unhealthy emotions.

Mindfulness interventions with elementary-school children in the U.S. is found to improve children's classroom behaviors, such as self-control and activity participation (Black & Fernando, 2014).

However, as an emerging approach, the effects of mindfulness practice have not been well elaborated in previous studies. Furthermore, mindfulness trainings have been provided mainly with children and adolescents in the U.S. and the Europe. This paper examines the effects of mindfulness on academic performance of elementary-school migrant children in China, where migrant children total 35.81 million and represent 13% of the nation's child population (All-China Women's Federation, 2013). By conducting a survey in two private schools that specifically enrolls migrant children in Beijing, this study looks at the relationship between mindfulness and academic performance and explores the roles of executive function in this relationship.

Literature Review

The Emerging Concept of Mindfulness

Mindfulness is defined as “the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience”

(Kabat-Zinn, 1994). Mindfulness, in other words, means to be attentive to what is happening within us, to us, and around us. The concept of mindfulness originates from religions such as Hinduism, Buddhism, and Daoism. It embodies the Hindu “yoga discipline,” the Daoist “qigong” (i.e. a controlled breathing exercise), and the Buddhist meditation (Kang & Whittingham, 2010; Smith, 1994)

In the 1970s, Jon Kabat-Zinn, an experienced meditator and a professor at University of Massachusetts Medical School, reframed the concept of meditation. Although enlightened by the Buddhist teaching, he toned down the religious elements in mindfulness and introduced it as a clinical approach to adjust human cognition, emotion, and behavior. Since then, mindfulness is adopted by western clinicians to develop therapeutic tools for various psychological issues. In the recent decades, mindfulness practice has become more popular in the U.S. and Europe and has raised increasing researchers’ attention (Baer, 2003).

Clinical Application of Mindfulness

In the recent years, mindfulness has become an increasingly popular approach in health services and education. Two types of mindfulness practice are developed: Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT).

MBSR, founded by Jon Kabat-Zinn in the late 1970s, was originally developed for patients with chronic pain and related stress (Kabat-Zinn, 2003). MBSR teaches individuals meditation techniques, such as body scan, sitting and walking meditation, and yoga, and the recognition of the relation between stress and illness. Participants in MBSR programs practice meditation skills to alleviate stress and pain. The practice has a long-

term perspective, since mindfulness skills need to be continually practiced on a regular basis (Irving, Dobkin, & Park, 2009).

As an adaption of MBSR, MBCT was created for preventing the relapse of depression, particularly for those with major depressive disorder (Segal & Teasdale, 2002). The two core components of MBCT training are guiding concentration and shifting negative mood (Felder, Dimidjian, & Segal, 2012). In addition to treating depression, MBCT is now expanded to a variety of mental issues, such as generalized anxiety disorder and mood disorder (Burke, 2010).

Mindfulness, Executive Function, and Child Development

Research shows that mindfulness training has positive impacts on children's *executive function*, a mental process that enables children to plan, focus attention, and handle multiple tasks (Center on the Developing Child, n.d.). Executive functions encompass a series of interrelated processes that relate to planning and implementing goal-directed activities (Flook et al., 2010). Generally speaking, executive function includes three aspects: working memory, which allows children to retain memory over a short period of time; mental flexibility, which allows children to shift perceptions under different demands; and self-control, which enables children to set priorities and control impulsive actions. More specifically, executive functions are embodied in several areas: impulse control (thinking before doing), emotional control (adjusting to the unexpected situations), working memory (keeping information in mind), self-monitoring (observing and reflecting on behaviors), planning and prioritizing (setting goals and plans to meet the goals), task initiation (taking action), and organization (keeping track of things mentally and physically).

Executive functions play important roles in children's school performance. Inadequate executive functions often predict cognitive deficits, poor socio-emotional adjustment, and poor academic performance (Flook et al., 2010). A case study shows that mindfulness practices in an education setting are particularly beneficial for children with executive functioning difficulties. Children with lower executive functioning showed an increase in executive functioning after participating in mindfulness practices (Flook et al., 2010).

Given that executive function involves self-management, behavioral regulation, and decision-making, executive functions also help with children's socio-emotional learning—a process to recognize and manage emotions and solve problems effectively (Zins & Elias, 2007). Studies have shown that socio-emotional learning helps with academic performance (Durlak et al., 2011; Zins & Elias, 2007). And mindfulness helps with child socio-emotional learning by integrating their cognitive and emotional development (Napoli, Krech, & Holley, 2005).

In sum, research has depicted links between mindfulness and executive function, mindfulness and academic performance, and executive function and academic performance. This study asks the research questions: how does mindfulness influence Chinese migrant children's academic performance? What roles does executive function play in this process? As shown in Figure 1, our hypothesis is that mindfulness leads to greater executive function; greater executive function then leads to better academic performance.

Method

Data

We conducted a survey among fifth-grade students in two migrant schools (i.e. five classes in total) in Beijing. The survey was mainly self-reported by students. The questions included children's basic demographic information, level of mindfulness, and ability to complete tasks. Teachers were asked to report the students' school grades. A total number of 227 students participated in the survey, among which 219 with complete information on all questions were included in our final sample. The students came from five classes; each class had 46, 47, 44, 50, and 32 students respectively. As shown in Table 1, the sample consisted of 52% boys and 48% girls. The majority of students aged 11 (58%) or 12 (35%) years; a few were 10 or younger (4%) or 13 or older (3%). Most students (65%) were not born in Beijing; the other 35%, although born in Beijing, were enrolled in the migrant schools instead of public schools. Only 23% started elementary education in the current schools; the majority (77%) were transferred from other schools. Most students (94%) were living with both parents at the time of survey; 4% were living with only one parent; 2% were living with people other than parents (e.g. grandparents, extended family members, and other).

Measure

The dependent variable, *school grades*, was measured by teacher-reported Chinese, math, and English grades in the most recent final exam. Ranging from 0 to 100, higher grades mean better academic performance.

As an indicator of executive function, *ability of task completion* was measured by the 4-item Task Completion Scale that was retrieved from Year-9 Follow-up Child Interview protocol of *The Fragile Families and Child Well-being Study* (Princeton University, 2011). The scale includes five items: "I stay with a task until I solve it,"

“Even when a task is difficult, I want to solve it anyway,” “I keep my things orderly,” “I try to do my best on all my work,” and “When I start something, I follow it through to the end.” Students were asked to rate the frequency of these experiences, where 0 = “never,” 1 = “rarely,” 2 = “sometimes,” and 3 = “often.” The final score ranged from 0 to 15; higher scores indicate greater ability to complete tasks.

The main independent variable, *level of mindfulness*, was measured by the Mindful Attention Awareness Scale (MAAS), a 15-item scale designed to assess a core characteristic of mindfulness (Brown, n.d.). Examples of items include “I break or spill things because of carelessness, not paying attention, or thinking of something else,” “I rush through activities without being really attentive to them,” and “I do jobs or tasks automatically, without being aware of what I’m doing.” The students were asked to report the frequencies of these experiences in their daily lives. The original scale answers were from “almost always” to “almost never,” indicated by value 1 to 6. To make it consistent with other scales in the survey and children’s common perceptions that larger number indicates more often, we asked students to rate “1” as “almost never” and “6” as “almost always.” In the analysis, we reversed the scores; the final score ranged from 15 to 90, with higher scores denoting higher levels of mindfulness.

In addition, we controlled for children’s demographic characteristics, including gender, age, whether born in Beijing, whether transferred from other schools, family type (i.e. living with both parents, one parent, or other), and class (i.e. coming from which of the five classes). All scales and questions were translated to Chinese. The language was adjusted with simpler grammar and words considering fifth-graders’ reading level.

Analytic Strategy

Our analyses began with descriptive analysis of sample characteristics. This was followed by bivariate analysis of task completion ability and school grades by level of mindfulness. In the bivariate analyses, level of mindfulness was divided into three groups (i.e. low, medium, and high) based on the 33% and 66% percentile of all sample. Ordinary linear squares (OLS) Regressions were then performed. First, we regressed task completion ability on mindfulness, controlling for students' demographic characteristics. After that, we regressed academic performance—Chinese grades, math grades, and English grades respectively—on mindfulness only, and then regressed academic performance on both task completion and mindfulness.

Results

Descriptive Results

On average, the sampled children had high level of mindfulness. They rated themselves 71.3 out of a 15–90 scale, with a standard deviation of 12.2 points. The students' abilities to complete tasks on average were 12.2 points out of a 0–15 scale, with a 2.6 points standard deviation. The average grades were 82.6 points for Chinese, 81.3 points for math, and 76.4 points for English.

Bivariate Results

Table 2 presents the bivariate results, which show that children's executive function and academic performance significantly vary across levels of mindfulness. With respect to executive function, children with higher levels of mindfulness had greatest ability to complete tasks. In terms of academic performance, children with highest levels of mindfulness had highest Chinese, math, and English grades in the last final exam. This

was followed by children with medium mindfulness, and then those with low mindfulness.

Multivariate Results

As shown in Table 3, mindfulness had statistically significant, positive association with children's abilities to complete tasks. Every one-point increase in mindfulness scale was associated with 0.06-point greater ability of task completion. In addition, ability to complete tasks differed by gender. Girls showed 1.17 points greater ability than boys. Task completion also differed by class. Compared with Class 1, Class 2 and 4 had greater abilities to complete tasks.

Table 4–6 presents the regression analyses of academic performance on task completion and mindfulness. In each table, model 1 regressed grades on mindfulness only; model 2 regressed grades on both mindfulness and task completion. In terms of Chinese grades (Table 4), one-point higher level of mindfulness was related to 0.17-point higher Chinese grade. When factoring in task completion, however, the positive effect of mindfulness was no longer statistically significant. Instead, every one-point greater ability of task completion was associated with 1.25-point higher Chinese grade.

Table 5 shows the regression analyses of math grades. Every one-point higher level of mindfulness was significantly associated with 0.25-point higher math grade. When controlling for both task completion and mindfulness, the positive effect of mindfulness became marginal. Ability of task completion, in contrast, showed strong, positive effects on math grades. More specifically, every one point higher task completion ability was related to 1.41 points higher math grade.

Finally, the results of English grades (Table 6) followed the same pattern as Chinese and math grades. Every one point increase in mindfulness related to 0.24 point higher English grade; but this effect disappeared after factoring in task completion. Every one point increase in task completion ability was associated with 1.78 points higher English grade.

Discussion

In sum, the results suggest that mindfulness has strong, significant, positive effects on academic performance. But when taking task completion ability into consideration, task completion has stronger and more substantial effect on academic performance, whereas mindfulness begins to lose significance. These results suggest that although mindfulness may show positive effects on school grades, it is the ability of task completion that exerts the effects. The finding supports our hypothesis: mindfulness leads to greater executive function; and greater executive function then leads to better academic performance.

Our study highlights the benefits of mindfulness, an awareness and focus on human beings' mental states and inner self. Mindfulness helps children control impulse, regulate emotions, and develop working memory. Altogether, these aspects enhance children's executive function, which improves their academic performance. Although the mechanisms of how mindfulness affects child brain, cognitive, and socioemotional development is still under research, our study validates the positive effects of mindfulness for Chinese migrant children.

As one of the few studies that apply mindfulness skills into Chinese migrant children, our findings provide implications for innovative intervention strategies and curriculum advancement. In terms of intervention strategy, this study highlights the

potential benefits of providing Chinese migrant children with mindfulness training. The training can draw from the ideas of Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) and address issues in migrant children's daily lives. Example topics may include peer interaction, attention and concentration in class, parent-child interaction, and mindful body regulations.

To maximize the impact of mindfulness on children's executive function and academic performance, schools can integrate mindfulness trainings into curriculum. By making mindfulness activities a regular exercise, children will be able to practice their mindfulness skills on a daily or weekly basis, and eventually integrate mindfulness into their developmental process.

Our study also carries implications for future research topics. While this study focuses on mindfulness and executive function, it is noteworthy that gender, family structure, and class also play important roles in migrant children's academic performance. Girls had significantly better Chinese and English grades than boys. Compared with children living with one parent, children living with both parents had substantially better Chinese grades (over 10 points difference), math grades (over 20 points), and English grades (over 20 points). Since children living with one parent were very few ($n=8$) in the sample, this large difference could result from extreme cases. But the relation between migrant children's family structure and academic performance warrants further exploration.

Finally, our study suggests a disparity between the two migrant schools in Beijing. One sampled migrant school (Class 5) only has one fifth-grade class and enrolls over 30 students only, while the other migrant school enrolls four fifth-grade classes that

include nearly 200 students. Class 5, or one of the schools, showed significantly lower Chinese, math, and English grades than Class 1 (in another school). The results may be due to differences in final exam questions and grading rubrics. On the other hand, even though migrant schools' educational quality is overall lower than public schools in urban China, the startling disparity across migrant schools in Beijing calls for more investigation and educational policy reform.

References

- All-China Women's Federation (2013). *The research report of left-behind children and migrant children in rural China*. Chongqing: Southwest China Normal University Press.
- Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical psychology: Science and practice*, 10(2), 125-143.
- Black, D. & Fernando, R. (2014). Mindfulness training and classroom behavior among lower-income and ethnic minority elementary school children. *Journal of Child and Family Studies*, 23, 1242-1246.
- Brown, K. W. (n.d.) Mindful Attention Awareness Scale (MAAS, trait version). Retrieved from <http://www.kirkwarrenbrown.vcu.edu/wp-content/scales/MAAS%20trait%20research-ready%20+%20intro.pdf>
- Burke, C. A. (2010). Mindfulness-based approaches with children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child and Family Studies*, 19(2), 133-144.
- Center on the Developing Child. (n.d.). Executive Functioning and Self Regulation. Retrieved from: <http://developingchild.harvard.edu/science/key-concepts/executive-function/>
- Collard, P. (2014). *The little book of mindfulness: 10 minutes a day to less stress, more peace*. London, UK: Gaia Books.
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-

- analysis of school-based universal interventions. *Child development*, 82(1), 405-432.
- Felder, J. N. & Dimidjian, S. & Segal, Z. (2012). Collaboration in Mindfulness-Based Cognitive Therapy. *Journal of Clinical Psychology* 68(2): 179–186.
- Flook, L., Smalley, S. L., Kitil, M. J., Galla, B. M., Kaiser-Greenland, S., Locke, J., ... & Kasari, C. (2010). Effects of mindful awareness practices on executive functions in elementary school children. *Journal of Applied School Psychology*, 26(1), 70-95.
- Irving, J. A., Dobkin, P. L., & Park, J. (2009). Cultivating mindfulness in health care professionals: A review of empirical studies of mindfulness-based stress reduction (MBSR). 61-66.
- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. New York: Hyperion.
- Kabat-Zinn, J. (2003). Mindfulness-Based Intervention in Context: Past, Present, and Future. *Clinical Psychology: Science and Practice*. 144-156.
- Kang, C. & Whittingham, K. (2010). Mindfulness: A Dialogue between Buddhism and Clinical Psychology.
- Princeton University. (2011). *Data and Documentation (Year 9)*, The Fragile Families & Child Wellbeing Study. Retrieved from
<http://www.fragilefamilies.princeton.edu/documentation/year9>
- Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). Mindfulness-based cognitive therapy for depression: A new approach to relapse prevention. New York: The Guilford Press.

- Smith, H. (1994). *The illustrated world's religions: a guide to our wisdom traditions.* [San Francisco]: Harper-SanFrancisco.
- Snel, E. (2013). *Sitting still like a frog: Mindfulness exercises for kids.* Boston, MA: Shambhala Publications.
- Zins, J. E., & Elias, M. J. (2007). Social and emotional learning: Promoting the development of all students. *Journal of Educational and Psychological Consultation*, 17(2-3), 233-255.

Table 1. Descriptive statistics of sample characteristics

	Mean (S.D.)
Gender [%]	
Male	52.1
Female	47.9
Age [%]	
<=10	4.1
11	58.0
12	34.7
>=13	3.2
Birth Place [%]	
Beijing	35.2
Others	64.8
First School [%]	
Yes	77.2
No	22.8
Family Type [%]	
Two-Parent Family	94.5
Single-Parent Family	3.7
Others	1.8
Mindfulness (15-90)	71.3 (12.2)

Note: N=219.

Table 2. Outcome variables by mindfulness

	Task		Chinese		Math		English	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Mindfulness								
Low	11.3	2.6	79.0	17.9	76.9	20.2	71.8	26.3
Medium	12.1	2.9	83.2	12.5	82.3	15.3	76.3	19.1
High	13.3	1.9	85.4	9.5	84.6	10.7	81.0	17.5
All	12.2	2.6	82.6	13.9	81.3	16.1	76.4	21.6
F-Test	12.1 ***		4.1 *		4.5 *		3.4 *	

Note: N=219. + p<.10, * p < .05, ** p < .01, *** p < .001. --- reference group.

Table 3. Regression analysis of task completion

	Task		
	B	S. E.	P
Mindfulness	0.06	0.01	***
Female	1.17	0.32	***
Age	-0.92	0.26	
Born in Beijing	0.34	0.34	
First School	-0.60	0.41	
Family Type			
Two-Parent	---	---	
Singe-Parent	-0.23	0.84	
Others	0.37	1.18	
Class			
1	---	---	
2	1.70	0.48	**
3	-0.77	0.49	
4	0.88	0.48	+
5	-0.82	0.56	
Constant	7.86	1.31	***
Adjusted R-square	0.24		

Note: N=219. + p<.10, * p < .05, ** p <.01, *** p < .001. --- reference group.

Table 4. Regression analysis of Chinese grades

	Model 1			Model 2			
	B	S. E.	P	B	S. E.	P	
Task Completion	---	---		1.25	0.36	**	
Mindfulness	0.17	0.07	*	0.10	0.07		
Female	7.21	1.69	***	5.74	1.70	**	
Age	0.28	1.39		0.40	1.35		
Born in Beijing	-0.61	1.81		-1.03	1.77		
First School	-0.13	2.18		0.61	2.14		
Family Type							
Two-Parent	---	---		---	---		
Singe-Parent	-16.89	4.47	***	-16.59	4.36	***	
Others	2.76	6.30		2.29	6.14		
Class							
1	---	---		---	---		
2		-4.91	2.58	+	-7.04	2.59	**
3		-0.45	2.63		0.51	2.57	
4		-2.57	2.56		-3.66	2.51	
5		-13.18	3.04	***	-12.16	2.98	***
Constant	70.60	6.98	***	60.77	7.37	***	
Adjusted R-square	0.22			0.26			

Note: N=219. + p<.10, * p < .05, ** p < .01, *** p < .001. --- reference group.

Table 5. Regression analysis of math grade

	Model 1			Model 2		
	B	S. E.	P	B	S. E.	P
Task Completion	---	---		1.41	0.45	**
Mindfulness	0.25	0.09	**	0.17	0.09	+
Female	2.05	2.09		0.40	2.12	
Age	-0.55	1.71		-0.42	1.67	
Born in Beijing	-0.17	2.23		-0.65	2.20	
First School	-0.67	2.70		0.16	2.66	
Family Type						
Two-Parent	---	---		---	---	
Singe-Parent	-21.62	5.52	***	-21.28	5.40	***
Others	0.92	7.77		0.39	7.61	
Class						
1	---	---		---	---	
2		-3.05	3.19		-5.45	3.22
3		-1.44	3.23		-0.36	3.19
4		-3.14	3.15		-4.37	3.11
5		-10.23	3.75	**	-9.07	3.69
Constant	67.92	8.61	***	56.84	9.15	***
Adjusted R-square	0.11			0.15		

Note: N=219. + p<.10, * p < .05, ** p <.01, *** p < .001. --- reference group.

Table 6. Regression analysis of English grade

	Model 1			Model 2		
	B	S. E.	P	B	S. E.	P
Task Completion	---	---		1.78	0.56	**
Mindfulness	0.24	0.11	*	0.14	0.11	
Female	15.87	2.62	***	13.78	2.64	***
Age	-0.71	2.14		-0.55	2.10	
Born in Beijing	-0.76	2.80		-1.36	2.75	
First School	1.39	3.38		2.44	3.32	
Family Type						
Two-Parent	---	---		---	---	
Singe-Parent	-24.0	6.91	**	-23.59	6.77	**
Others	8.25	9.73		7.58	9.53	
Class						
1	---	---		---	---	
2	-3.57	4.00		-6.61	4.03	
3	-0.35	4.06		1.02	3.99	
4	-2.22	3.95		-3.78	3.90	
5	-11.22	4.70	*	-9.76	4.63	*
Constant	56.13	10.79	***	42.11	11.45	***
Adjusted R-square	0.22			0.26		

Note: N=219. + p<.10, * p < .05, ** p <.01, *** p < .001. --- reference group.



Figure 1. Hypothesis of the relation among mindfulness, task completion, and school grades