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Family Trips and Academic Achievement in Reading during Early Childhood: Evidence from a National Study

Introduction

Many believe that travel is educational for children (Crompton, 1979; Fantuzzo, Tighe, & Childs, 2000; SYTA, 2008). However, empirical evidence for the educational benefits of travel, especially family trips—defined as any forms of activities done with family members outside of a person’s usual living environment—is limited (Stone & Petrick, 2013). Previous literature mainly focuses on pre-trip decision-making and on-site experience (Fu, Lehto, & Park, 2014; Hilbrecht, Shaw, Delamere & Havitz, 2008) and often disregards family trips’ impact on children afterwards, specifically on their educational outcomes (Durko & Petrick, 2013; Hilbrecht et al.). A few exceptions examine the effects of summer vacation on children’s test scores (e.g., Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996; Helf, Konrad, & Algozzine, 2008; Morrison, 1924). Little research has focused primarily on educational benefits of family trips in early childhood or examined the effects of different types of trips in a longer time span. To address this research gap, the current study examines the impact of family trips on children’s academic achievement and provides a rationale for the promotion of family trips for their educational benefits.

The paper argues that family trips benefit children’s academic achievement through the mechanism of experiential learning. Experiential learning, an idea first proposed by Dewey (1938), is “the learning process whereby knowledge is created through the transformation of experience” (Kolb, 1984, pp.41). Previous literature has employed the concept of experiential learning to explain how children learn through trips (Stone & Petrick, 2013, 2017).

Previous literature shows difficulty in measuring children’s learning from family trips with an objective standard (Stone & Petrick, 2017). In this paper, we examine the relationship between the children’s family trip experience and their academic achievement with tangible learning outcome, test scores. Moreover, this study contributes to the understanding of which types of family trips are most beneficial to educational attainment and when family trips should take place to benefit children the most.

Accordingly, the purpose of this study is to address the following research questions: (a) will family trips outside of the classroom and residential settings raise young children’s academic achievement? (b) If so, what types of family trips in terms of activities will benefit academic achievement the most? In addition, (c) does learning from family trips have immediate or lagging impact on children’s academic achievement?

Literature Review

Experiential Learning and Educational Benefit of Family Trips

Many studies have shown that trips in general can lead to better academic achievement such as students’ intelligence test scores, mathematics test scores, general knowledge, and overall academic performance after taking a trip (David et al., 2004; Ingraham & Peterson, 2004; Morrison, 1924; Novelli & Burns, 2010). Stone and Petrick (2017) introduce experiential learning as a mechanism through which trips impact children.

The idea of experiential learning started with Dewey (1938) and was further developed by Kolb (1984). It emphasizes the role of experience in learning. According to Kolb, Boyatzis and Mainemelis (2001), based on a Concrete Experience (CE)—in our case family trips—a person can reflect on the experience (Reflective Observation, RO) and derive implications (Abstract Conceptualization, AC). Then, the implications lead to Active Experimentation (AE), which is the step where the person tries out what he or she has learned from the CE and creates a new experience.

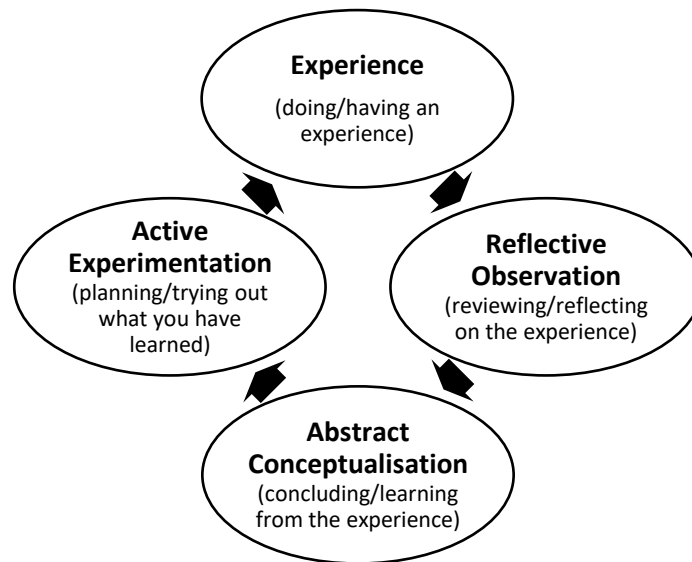


Figure 1. Experiential learning process (Davis & Lowe, n.d.)

For experiential learning to occur, the experience needs to be concrete (Kolb, 2014). Family trips provide such concrete experience such as hiking in a national park or visiting a modern art museum. After the family trips, children reflect on their experience. Through images, memories, and emotions, the experience is conceptualized into an abstract form. The process best fits the arguments of various researchers that learning encompasses not only cognitive dimensions but also emotions, visual and tactile information, and social interactions (Anderson, 2003; Dierking & Falk, 1994). Then, children can engage in active experimentation based on what they learned.

Previous literature has repeatedly confirmed the educational benefits of experiential learning (Alkan, 2016; Alvarez & Rogers, 2006; Davidson, Passmore, & Anderson, 2009; Dierking & Falk, 1994; Scholz & Tietje, 2002). Alkan provides evidence on experiential learning’s positive impact on academic achievement in chemistry. Alvarez and Rogers and Scholz and Tietje both found that experiential learning heightens students’ participation, understanding of the problem and their problem-solving skills. Davidson et al. documents how experiential learning outside the school environment can stimulate learning and increase learning potentials of the children. Indirectly, experiential learning can also affect academic achievement through stimulating self-esteem and self-efficacy (Galeotti, 2015; Ng, Dyne, & Ang, 2009).

More directly, more literature has examined the educational benefits of family trips (e.g., Byrnes, 2001; Hilbrecht et al., 2008; Stone & Petrick, 2017). Byrnes asserts going on trips can help children learn and practice concepts and skills of core curriculum areas in real life. Stone and Petrick (2013), using a qualitative approach, shows that mothers believe learning from family trips will help their children in classroom education. Similarly, children learn new skills, gain new information, and becomes motivated for more learning (Hilbrecht et al., 2008).

Though not confined to young children, past studies have shown that trips can lead to student’s growth in academic achievement. Educational trips such as study abroad programs can help students strengthen their academic interest and self-confidence (Gmelch, 1997; Miller-Younes & Asay, 2003; Dwyer, 2004; Perrin & Thompson, 2010). Also, educational trips positively affect students’ academic self-concept (Bodovski, 2014) and physical and mental well-being (de Bloom et al., 2010; Kuhnel & Sonnentag, 2010), which are reported to have positive impacts on academic achievement (Ayyash-Abdo & Sánchez-Ruiz, 2012; Lehto, Fu, Li, & Zhou, 2017; Schiefele, Krapp, & Winteler, 1992; Tavani & Losh, 2003).

Methodology

Data

The dataset used is Early Childhood Longitudinal Study-Kindergarten Class of 1998–99 (ECLS-K) data collected by the National Center for Educational Statistics (NCES). ECLS-K includes a nationally representative sample of the U.S. children population. The present study used data from wave 1, 2, 3, and 5, including parent interviews and reading test scores of children (Table 1). Parent interviews provided information regarding family trips (see Appendix A), SES and home environments. For the final sample used in the analysis, we excluded children who did not have complete test scores for reading in wave 2, 3 and 5. This process results in a sample of 3,224 children.

Table 1. ECLS-K waves of data collection applied to the study

Data collection	Date of collection	Sample
Fall-kindergarten (wave 1)	Fall 1998	Full sample
Spring-kindergarten (wave 2)	Spring 1999	Full sample
Fall-first grade (wave 3)	Fall 1999	30% subsample
Spring-third grade (wave 5)	Spring 2002	Full sample

Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K), spring 2007.

Analysis Strategies

The study first performed descriptive statistics for the dependent and independent variables; then it analyzed how different demographic variables affects the frequency of family trips; last, it conducted ordinary least squares (OLS) analyses to examine the effects of family trips. We estimated four models. The first model included the family trip variables from wave 2, 3 and 5 as dummy variables; the second and third models consider each type of trips (e.g. activities) at wave 2 and 3 wave as a dummy variable. The first model examined to what extent family trips contributed to the children’s academic achievement in reading and the second and third models investigates what type of family trip mattered. In the fourth model, we reran the regression models using only significant family trip types – museum visits.

Before proceeding with the analyses, we used multiple imputations to address missing values in our data. Multiple imputations, under a missing-at-random assumption, uses plausible values in place of the missing values so that we can achieve unbiased parameter estimates (Graham, Olchowski, & Gilreath, 2007). In this study, we performed multiple imputations by chained equations (MICE)–one of the widely-adopted multiple imputation methods–by employing MICE module in Stata (Royston & White, 2011).

Finally, children within the same school or classroom share commonality among their student identification numbers in the ECLS-K dataset. Hence, we utilize cluster-robust standard errors to avoid overstating estimate precision (Cameron & Miller, 2015; Rogers, 1993).

Results

Effects of Family Trips

Reading. The first analysis looked at the impact of family trips as a composite variable from each wave. The results in Table 2, Model 1 column shows that family trips taken in wave 2 and 3 are positively correlated with the reading score at wave 5. Reading score at wave 5 ranged from 48.10 to 196.44, with a mean value of 129.80. A one-unit increase in the family trips at wave 2 and 3 is associated with an increase in the reading score by 0.98 and 2.33 on average respectively.

At wave 2, family trips variable ranged from -1.33 to 2.07, which indicates that reading achievement difference between children with the lowest family trips value versus the highest would be approximately 3.33 points, if other conditions were identical. Similarly, the reading score difference between children with the lowest family trips value and the highest at wave 3 would be approximately 9.81. Hence, we can argue that third-grade children who took family trips when they were in the first grade or kindergarten have higher reading achievement if other conditions were identical. Family trips that were taken in the same semester, however, were found to be insignificant.

Effects of Family Trips by Types

As family trips at wave 2 and 3 were positively correlated with academic achievement at wave 5, we ran our second analysis to see what types of family trips from each wave had the highest contribution. To do so, we included binary variables for each type of family trips. For wave 2, among the different types of family trips, those to a museum, art gallery, or historical site had a positive relationship with the reading score at wave 5. If the children took family trips to a museum, art gallery, or historical site at wave 2, they are to have reading score 3.32 points higher compared to those that did not.

The result was similar to wave 3 and are shown in the column Model 3. Family trips to art, science, or discovery museums had the most significant impact among all types of family trips. Children who took such family trips in wave 3 are expected to have 2.36 points higher in their reading scores at wave 5 compared to those who did not take trips. Family trips to state or national parks had a limited but significantly positive impact on children's reading academic achievement.

Effects of Family Trips to Museums

From the previous two analyses, we observed that taking family trips, especially those to museums was expected to improve reading scores both at wave 2 and 3. Hence, we specifically examined the impact of family trips to museums from each wave on children's academic achievement (Model 4). Consistent with the previous findings, we found that family trips to museums taken at both wave 2 and wave 3 have a significantly positive impact. However, family museum trips at wave 5, which is at the same period when the test was taken, did not have any significant impact on children's reading score.

Table 2. Impact of family trips on reading IRT score at wave 5^a (n=3,224)

Variable	Model 1		Model 2		Model 3		Model 4	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Family trips								
wave 2	0.98*	0.55						
wave 3	2.33***	0.56						
wave 5	-0.49	0.52						
Wave 2								
Art gallery, museum, historical site			3.32***	1.03				
Zoo, aquarium, petting farm			0.91	1.00				
Play, concert, other live show			0.58	0.99				
Athletic, sporting event			0.42	0.94				
Wave 3								
Art, science, discovery museums					2.36**	1.03		
Historical sites					0.76	1.03		
Zoos, aquariums					1.00	0.99		
Amusement parks					0.63	1.01		
Beaches, lakes, rivers					1.88	1.40		
Plays, concerts					0.64	1.04		
State, national parks					1.86*	0.98		
A large city					-0.25	1.01		
Museum related visits								
wave 2							2.81***	1.03
wave 3							2.74***	1.01
wave 5							0.78	1.03
Controls								
White	12.14***	0.86	11.09***	2.62	11.77***	1.05	10.77***	1.88
Black	1.85	1.67	-0.14	2.93	2.88	1.89	-0.32	2.29
Asian	5.03*	2.79	3.30	3.75	4.77*	2.75	2.75	3.26
Hispanic	8.55***	1.89	7.02**	3.08	8.79***	1.97	6.88***	2.52
Other	3.46*	2.05	2.20	3.24	3.85*	2.09	1.87	2.61
Gender	-2.78**	0.94	-2.62**	0.94	-2.87***	0.94	-2.77***	0.94
Reading base score	1.00***	0.04	1.00***	0.04	0.99***	0.04	1.00***	0.04
SES	5.28***	0.60	5.64***	0.59	5.88***	0.58	5.96***	0.59
English speaking	5.69***	2.05	6.01***	2.05	5.32***	2.04	5.91***	2.01
Expected education level	0.37*	0.21	0.37*	0.21	0.32	0.21	0.38*	0.21

Time with child	-0.28	0.50	-0.05	0.50	-0.23	0.49	-0.12	0.52
Constant	61.98***	4.39	60.72***	5.22	58.77***	4.87	60.91***	4.50

Notes. a. Interaction between 1) three different family trips variables, 2) each type of trip and SES, and 3) each family trips to museum and SES are not demonstrated in the table as they were found to be insignificant and the space is limited.

* p<0.1, ** p<0.05, *** p<0.001

Family Trips by SES

The above analyses show that SES is a critical mediating variable on children’s academic achievement in reading. The table 3 shows that children from lower SES are less likely to go on a family trip or visit museums. For example, 22% of children from lowest 25th percentile SES group visited a museum at wave 3 whereas, 62% of children visited from highest 25th percentile SES group did.

Table 3. Family trips by SES

Wave	Family trip			Art gallery/museum/historical site	
	SES	Mean	Std. Dev.	Mean	Std. Dev.
2	25 th percentile	-0.30	0.93	-0.41	0.97
	50 th percentile	-0.05	1.00	-0.04	0.95
	75 th percentile	0.11	0.98	0.16	0.91
	100 th percentile	0.28	0.97	0.45	0.90
3	Family trip			Art gallery/museum/historical site	
	Race	Mean	Std. Dev.	Mean	Std. Dev.
3	25 th percentile	-0.41	0.97	0.22	0.41
	50 th percentile	0.30	0.46	0.37	0.48
	75 th percentile	0.36	0.48	0.43	0.50
	100 th percentile	0.46	0.50	0.62	0.49

Conclusions and Discussion

From a nationally representative sample, this research validates the benefit of family trips to academic achievements of young children. Family trips—especially those to a museum, art gallery, or historical sites—can help improve reading scores; the impact, however, may not be immediate but will benefit children’s academic attainment in a relatively longer term. Family trip experience happened more than six months before the tests has significantly positive impact on reading test scores. Hence, it is vital that parents take children on family trips even if they do not observe any immediate academic benefits.

These results contribute to our understanding of general travel to the growth of school-aged children, and further validate the old belief that travel is educational and crucial to a child’s intellectual growth. Past studies validated the benefits of traveling either in a more mature population (e.g., Laubscher, 1994; Dwyer, 2004; Novelli & Burns, 2010; Scarinci & Pearce, 2012; Ingraham & Peterson, 2004). This research focuses on a nationally representative sample in the United States with the tracking of a cohort of children from kindergarten to eighth grades; the dependent variables are standard achievement scores in reading. The results carry much external validity.

Among different types of family trips, visits to a museum, art gallery, or historical site (wave 2) and visits to art, science, and discovery museums (wave 3) have the most significant impact on children’s academic achievement. This is in line with previous literature that confirmed educational values of such venues, especially museums. Museums are not only educational (Wu & Wall, 2017) but also can motivate children to learn and develop an interest (Briseño-Garzón, 2013; Dierking & Falk, 1994). Family trips to museums are also known to benefit parents and family bonding (Wu & Wall; Briseño-Garzón).

Importance of family trips to museums provides insight into curriculum planning. Children from lower SES is disadvantaged in reading test score from extra-curricular activities. This disadvantage could be

addressed if schools provided field trips outside of their classroom to museums as a part of the extra-curriculum activities and involve parents in the field trips to enhance the benefit.

The limitations of the study lie in its nature of using second-hand data. Though a national educational dataset could provide us with a large scale and representative sample, it lacks the depths of the insights and the validation of the mechanism of the impact. The datasets could not empirically test if experiential learning was the real mechanism behind children learning from family trips. Also, we were not able to investigate the impact of family trips beyond third grade, and the impact of family trips could be even longer-lasting. The so-called mind-opening experience of trips can only be tested in longer life-span of a person regarding the awareness of the global environment and the realization of oneself, and further the choices he or she makes during his or her lifetime. Those choices could impact one's achievement in even longer term. This assumption remains to be tested.

The future research in this area calls for studies with more in-depth measurements on experiential learning process; a life-long tracking of a cohort of children following their growing-up, actively working, and further reaching their retirement age; a random trial of a field experiment in elementary or middle schools. Studies above could provide even more internal and external validity on the impact of trips and travels outside of the home and school environment.

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Appendix A

Questionnaires used for family trip variables

Wave	Questionnaires
Wave 2	HEQ130 In the past month, that is, since {MONTH} {DAY}, has anyone in your family done the following things with {CHILD}? Gone to a play, concert, or other live show? HEQ140 In the past month, that is, since {MONTH} {DAY}, has anyone in your family done the following things with {CHILD}? Visited an art gallery, museum, or historical site? HEQ150 In the past month, that is, since {MONTH} {DAY}, has anyone in your family done the following things with {CHILD}? Visited a zoo, aquarium, or petting farm? HEQ180 In the past month, that is, since {MONTH} {DAY}, has anyone in your family done the following things with {CHILD}? Attended an athletic or sporting event in which {CHILD} is not a player?
Wave 3	HEQ.150 During the summer, did you or another family member take {CHILD} to any of the following places? a. Art, science, or discovery museums? b. Historical sites? c. Zoos or aquariums? d. Amusement parks? e. Beaches, lakes, or rivers? f. Plays or concerts? g. State or national parks? h. A large city (other than where {CHILD} lives)?
Wave 5	HEQ.017 In the past month, that is, since {MONTH} {DAY}, has anyone in your family done the following things with {CHILD}? a. Gone to a play, concert, or other live show? b. Visited an art gallery, museum, or historical site? c. Visited a zoo, aquarium, or petting farm? d. Attended an athletic or sporting event in which {CHILD} was not a player?
