'Tiger-Mom' Economics: Is Extra Curriculum Grade-enhancing or Stress-causing to Teenage Students?

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Abstract

'*Tiger-Mom*', *Wolf/Eagle Dad*', and '*Helicopter Parents*' all portrait modern parents' parenting practice to child-raising. It captures the spirit of parenthood where children are 'hovered' over by their beloved parents who expect their child(ren) to be high achiever(s), multi-talented performer(s), and eventually elite college/university goer(s). These children growing up under such expectations, however, do not always meet their parental aspirations. Based on a case study of middle-school students, this paper assesses the linkage between academic performance and voluntary- or involuntary- (i.e. parent-pressure and/or -choice) extracurricular activities. It reveals that teenagers engaging in extra-curricular, especially non-academic subject related, activities tend to experience grade improvement. Nonetheless, 'Tiger-mom' parenting over these activities seems to cause stress and grade deterioration in most students. Modern parents are therefore advised to use caution when forming expectations, practicing parenting, and working on the needs of their teenagers. The same advice can also be taken by school administrators and teachers in the class environment.

Keywords*:* 'Tiger-mom' parenting, extra curriculum, academic performance, teenage students

1. Introduction

In 2011, Yale University law professor, Amy Chua, admitted being a 'Tiger mom' in her controversial publication of '*Battle Hymn of the Tiger Mother*' (Chua, 2011). Her debate of proper parenting has raised considerable attention among parents. What defines 'Tiger mom'? Who are 'Tiger moms'? Technically, 'Tiger mom' depicts a parent or a group of parents who practice parenting demands their child (children) become(s) a high-academic achiever, a multi-talent performer, and an elite college goer. In the Western world, such parents are commonly known as 'hovering' or 'helicopter' parents (Cline & Fay, 1990), in contrast to the so-called 'Tiger-moms' and 'Wolf/Eagle dads' of their oriental counterparts.

The 'Tiger mom' is built on five principles: *persistence*, *hard-work*, *discipline*, *structure*, and *consistency*. Distinctively different from the 'Tiger mom' is the 'Teddy-Bear mom' whose main focus is on warmth and cuddliness, and the 'Dolphin mom' who accentuates 'play, fierce love, and protectiveness' (Smerling, 2011). Chua (2011) asserts that Western parents emphasize the idea which stresses academic success be an unhealthy act; learning should be fun to children, whereas parents of the East believe that the best students with the highest academic achievement definitely reflect successful parenting (also see Parmar et al., 2004; 2008). Children of a 'Tiger mom' basically have no non-academic freedom. In addition to demanding exceptional grades by their offspring, 'Tiger' parents confine their children's non-/after-school activities – as illustrated in Chua (2011) '*no playdates, no sleepovers, and even no meals for 'poor' (i.e. non-'A') academic performance*'.

While Western parents praise their children for non-academic talents and accomplishments, as appeared in the '*What Would You Do? Diners Confront Tiger Mom*' scenario presented by ABC news (http://www.youtube.com/watch?v=5Yul9P3m0qo&feature=youtu.be), stringent Asian parents may often feel enraged when realizing their children's academic underperformance (which may still be high and/or reasonable grades for Western parents), and demean them by saying '*an A- is like an F*'.

In the literature, although the term 'Tiger mom' is not commonly used to discuss strict parenting, many researchers study and differentiate various parenting styles from distinct ethnicity groups, philosophical principles, and cultural aspects. Yang and Zhou (2008) analyze the parental process of Chinese-American families, recognized as the 'model minority', claiming that high academic performance of Chinese-American children is mainly thanks to positive parental influence and a supportive home environment. Constructive parenting includes direct involvement in a child's school life, and structured and scholarly-focused curriculum plays a crucial role in educational achievement. This assertion of Yang and Zhou is reiterated by Zadeh et al. (2008) who suggests that acculturation is prone to influence children and parents of immigrant families in their perception of school success and failure. They attribute academic achievement more to the 'family' factor (i.e. parents' involvement in their child's learning) than to the 'effort' students put forth in school. The assessment of minority students' educational socialization by Bempechat et al. (1999) shows that relative to Western and African students, Asian children tend to generate stronger conceptions of guilt about their parents' sacrifice and shame if they underperform scholarly. A mutual understanding is kept among Asian families and their children that good school performance is an undisputed expectation and has its own intrinsic value.

The 'Tiger mom' analysis follows the theoretical foundation of Dweck (1999). Instead of studying students' in-class academic engagement, this paper uses after-school activities to discuss whether participating in extra curriculum can help students achieve in class. If it can, in what scope (e.g. academic subject-related or non-academic activities) would the enhancement be deemed feasible? Given the debate of the 'Tiger mom' phenomena, it is also interesting to see if the after-school curricula which lead to potential grade influences were voluntarily chosen by the children, or were in fact decided upon and by the parents. This analysis is novel given that most existing literature on student learning primarily focuses on academic (or, subject-specific) activities, the learning method, and its environment. Hence, the empirical findings could add intellectual value and complementary aspect to the educational field and the practices of parenthood.

2. Theoretical Framework

In the mid-1980s, social psychologist Carol Dweck developed her study on the theory of human intelligence making a revolutionary finding of individuals' mindsets and beliefs pertaining to how they see themselves and how they face and deal with failure. Her theoretical analysis was later applied by academic researchers in children's learning and self-perception studies.

'Entity' vs. 'Incremental' Theory of Intelligence

According to Dweck (1999), an individual's intelligence level can be either static or can grow. Dweck categorizes those who believe their brainpower to be fixed, which implies that success is made through an individual's inborn ability, into the '*entity*' theory of intelligence, whereas those who believe in a growth mindset, where success can be obtained by hard-work and training, are categorized in the '*incremental*' theory of intelligence (also see Dweck, 1986, 1988; Dweck & Bempechat, 1983; Jose & Bellamy, 2012). In the process of self-perception and problem management, a 'static' intelligence individual would tend to self-inform that he is smart and would try to look smart. Therefore, he would be inclined to avoid challenges (since the challenges may make him look bad if not successfully dealt with), to lose hope and give up easily as facing obstacles, to see effort as worthless and wasted, to ignore or wrongly take negative but useful feedback, and feel unjust and threatened as seeing others achieve. Such an 'ostrich-like' mindset, like an ostrich hiding its head in the sand analogously implies an individual not wanting to face the facts (challenges), ignore criticism, and not self-reflect and self-improve, would tend to result in limited achievement. In contrast, a 'growth' intelligence person more likely has a desire to learn and develop. He would positively take the challenges and try to turn them into opportunities, face and deal with obstructions, put persistent endeavor until he excels, accept criticism and self-review/reflect, and applause success of others meanwhile inspired and learning from them. Consequently, such 'growth' mindset would promote higher levels of achievement.

By experimenting on junior high school students of New York in their mathematics study and based on the framework of 'entity' and 'incremental' intelligence, Dweck and her colleagues suggested that students with 'fixed' intelligence tended to experience downward academic performance while others moved forward with their 'growth' minds (see Blackwell, et al., 2007). On the other hand, Dweck claimed that praising students for their intelligence might in fact restrain their intellectual growth. To ensure the growth in students' intelligence and motivation, she suggested that as a student achieves high scholarly performance (e.g. high test score), his parents (teachers) would want to praise him for his hard-work (e.g. say '*Well done on the test!*'), rather than acclaim his innate ability (e.g. '*You are so smart*!).

3. Method

3.1 Participants

This study involves middle school students primarily between 12 and 14 years of age in grade levels six, seven, and eight. A total of 1,098 teenagers (50% female and 50% male) from two public middle schools in Las Cruces, New Mexico, are the participants. Table (I) contains demographic information based on age and grade levels. As observed, the number of 12- and 13-year olds boys and girls who presumably are in the 6^{th}- and 7^{th}- grades are almost equally distributed in a heavier weight, whereas the group of the 8^{th} graders, most likely at 14 years of age, share a relatively smaller weight in this activity. Insignificantly but worth-pointing, there are three students who failed to specify their gender, which leads to the total valid gender count equivalent to 1,095 instead of 1,098.

From all the effective (gender) counts, 306 male and 321 female students took the survey, composing the useable data points, or a complete response rate of 57.2%; it is assumed that every survey question was answered truthfully and/or to the best of the participants' knowledge. The other 42.8%, equivalently to 239 male and 229 female students while 11 of them also failed to identify their age, answered their questionnaire incompletely which makes their inputs unusable in the econometric study. A 42.8% of the survey incompletion rate is rather high. Possible attributed factors may include students' maturity and survey experience, students' comprehension of the questionnaire, and/or the process of survey implementation. Somewhat obvious, the older age group, namely the 14-year-olds or the 8^{th} graders, has the highest completion rate (61.4% age-wise and 63.3% grade-wise), which may be supported by their physical and academic maturity, better understanding of the survey concept, and/or their experience taking a survey elsewhere. On the contrary, close to half of the 6^{th} graders were inexperienced or may be improperly understood the concept and value of the survey thus incompletely providing their input.

The making of this survey questionnaire is aimed at clarity, straightforwardness, and readability to all grades in the middle school. However, the surveyees' overall comprehension shows inconsistency (as suggested in the above-mentioned maturity and experience factors) as reflected in higher incompletion rates from the junior participants and the lower rate from their senior counterparts. Lastly, in the process of survey implementation, the school personnel were given brief instructions as how to advise students taking the survey. Of these instructions, '*to fully complete the survey*' was emphasized to all students. Even so, practical reasons explaining the significant incompletion rate, whether from loose procedure enforcement by school staffs or students' voluntarily discontinuing their survey in the process, are unknown.

AES (or, Advanced Education Services) is an academic program designated to enrich a gifted child's scholarly experience and development (referred to as '*AES Vision*' from http://lcps.k12.nm.us/departments/instruction/special-education/advanced-education-services/).Through academic diagnosis and assessment process, AES students, once identified, normally are grouped for general and/or subject-specific enrichment in every academic year. Here, among the 1,074 responses (from a total of 1,098 survey responses), almost 90% of all students from both middle schools reported their knowledge of AES. Whereas around 20% (in both age and grade categories) reveal their affirmative AES status, 80% of these teenagers are non-participants.

3.2 Instrument

3.2.1 Survey

A written survey is given at each of the two middle schools. To ensure confidentiality, the survey contains neither school information (e.g. school name and address) nor a student's identification (e.g. student's name and school identification (I.D.)). (The survey questionnaire is available upon request to the corresponding author).

3.2.2 Procedure

The survey questionnaires were given to every middle-school student at the two schools. Each school's advisory staff arranged and oversaw the surveying procedures. They collected and returned the finished copies of the survey to the project conductor (i.e. author) for statistical analysis. Survey time ranged from 10 to 15 minutes but the advisory staff were asked to adjust to a reasonable timeframe based on the pace of the students' work. As a part of the survey preparation, institutional and official approvals were obtained before the survey execution given that it is a human-subject related study.

3.2.3 Regression analysis

To properly study the relationship between middle-school students' academic performance and their participation in after-school/extra-curricular activities, a linear regression model is implemented:

$$\boldsymbol{Grade = \alpha + \beta 1\, ExtraCur + \beta 2\, ActSubject + \beta 3\, ActNum + \beta 4\, Mandatory + \varepsilon}$$

where the endogenous variable, *Grade*, is estimated by the standard student Grade Point Average (GPA) recorded on each students' survey. An 'A' grade is counted as 4.0 points, a 'B' as 3.0 points, a 'C' as 2.0 points, a 'D' as 1.0 point, and an 'F' grade assigns 0 credits. For the group of exogenous variables, *ExtraCur* denotes 'extra-curricular activities' indicating whether a student participates in any after-school activities. Its dummy value becomes 1 if he/she takes part and 0 otherwise. *ActSubject* stands for 'activity subject', measuring after-school/extra-curricular enrichment whether it is academic subject-related (e.g. math club, language arts and/or science training). Its dummy value assigns 1 for the academic subject-related activity, while any non-academic subject-related activity (e.g. sports, arts, music) is designated to 0 values. *ActNum* indicates the actual number of activities each middle school student partakes. Finally, the last dummy variable, *Mandatory*, is employed to evaluate the students' activity participation based on his/her choice/decision structure, with the value of 1 assigned for *Mandatory* choice signifying the role of parents in the decision-making process, contrast to the value of 0 for students' discretionary power. As conventionally discussed, α is the intercept (constant) term, and ε denotes the residuals of the model with its expected value equal to zero.

The purpose of this analysis is to determine the signs of the coefficients $\beta 1,\ \beta 2,\ \beta 3, and\ \beta 4,$ respectively. A positive $\beta 1$ would suggest positive academic reinforcement of the students through their participation in extra-curricular activities. A negative value of $\beta 1$ would indicate a detrimental effect to school performance. Likewise, a positive sign of $\beta 2$ suggests that the teens who take part in academic subject-related after-school activities would tend to enhance their learning eventually reflecting higher scholarly performance (or, grades). Such an outcome indirectly sends an endorsement to Dweck's (1999) 'incremental' theory of intelligence where through spending time and effort attending subject-related extra-curricular enrichment student could potentially improve and support their academic standing at school. On the other hand, a negative value of $\beta 2$ is assumed to hypothetically affect grades, which implies that after-school activities in general, especially if they are class-related, may add no advantage to students' learning. The extra work of class-related subjects after school may in fact be somewhat exhausting and overburdening students.

Would teenagers participating in more after-school activities improve their academic performance? A positive value of $\beta 3$ is believed to support students' grade enhancement. However, if $\beta 3$ is negative, it suggests that overloading and/or over-committing to after-school activities by students, where in some cases the academic and extra-curriculum are reversely prioritized (i.e. extra-curriculum is deemed more important than academic learning), could ultimately become a grade impediment to them. Finally, a positive sign of $\beta 4$ most likely endorses the students' role in the decision-making process for their after-school activities. Here, a 'participative' parent not only encourages his/her children to be involved in extra-curriculum, but he/she also helps determine the activities for them and makes sure their participation is committed and accountable. Although such 'help-chosen' outcome reflects the spirit of 'Tiger mom' parenting, it is debatable, as the activities are not selected based on the interests of the teens. A negative $\beta 4$ indicates that a compulsory decision by parents could end up straining their child's school grades.

4 Empirical results and discussions

The empirical results from students' inputs are reported in Table (II-a) and (II-b), where the former table focuses on all students in the sample collection, while the latter includes only the AES group. Analytically, the primary method of econometric estimation is based on Ordinary Least Squares (OLS).

For comparative purposes, the same regression model is also examined by the Probit estimation which requires restructuring/re-categorizing the values of dependent variable ('*Grade*') into dummy values with '1' defined for those who receiving semester grades of 'A' and 'B', and '0' for those with grades of 'C', 'D', and 'F'. Both OLS and Probit results are compatible in estimating the signs of the coefficients. The OLS model entails more grade characteristics, thereby only OLS estimates are reported in this section. Moreover, for model reliability, the regression equation was tested and corrected for the heteroscadasticity on the variance dispersion and the multicollinearity test was performed for treatment of the exogenous variables. As examined through the regression results (in both Table (II-a) and (II-b)), one would find that the R-squared, representing the 'goodness of fit', is rather small. Plausible explanations for such a finding may include: (1) The endogenous variable ('*Grade*') in this study faces range restriction with which it is on distinct assigned values of 4.0 (for grade 'A'), 3.0 (for grade 'B'), 2.0 (for grade 'C'), 1.0 (for grade 'D'), and 0.0 (for grade 'F'). Such limited value assignments may in fact confine the model's overall fitness to its data. (2) As suggested by Frost (2013), human-behavior or psychological studies, as demonstrated in this analysis, normally are subject to low R-squared values, simply due to the fact that humans are harder to predict and track for behavioral changes than physical processes.

As observed in both tables, the signs of the constant α and parameter β estimates on *ExtraCur*, *ActSubject*, *ActNum*, and *Mandatory* are consistently the same across all students and their AES peers, although more significant effects (e.g. 1% and 5% significance levels) of parameters are detected in Table (II-a) than in Table (II-b) (where no robustness is found on the variables except for the constant term). Hence, extra-curriculum to these teens are believed to be grade enhancing rather than deteriorating. Through daily intensive academic training in school, these young adults seem to reveal their enjoyment in after-school events, as supported by their school performance. However, they disclose that extra-curricular activities centered on academic subjects may in fact produce no value-added benefits to their grades, due to the wearying effect of the daily reiteration of academic practices. These results suggest a theoretical incongruity in contrast to the intelligence study proposed by Dweck (1999). To these teens, 'incremental' intelligence can marginally be complemented by the prolonged practice of academic subject(s) after school; only a proper balance between scholarly and non-scholarly activities, both in and after class, deliver students a constructive performance outcome.

As suggested in the values of the estimate of *ActNum* (0.0788 in Table (II-a), at the 1% significance level; 0.0552 in Table (II-b)), some after-school activities tend to be grade enhancing. This result is anchored in the principle of prioritizing academic learning over extra-curricular activities. Although students who have something to do after class seem to receive a scholastic advantage over those who don't, it is still unclear as to how many after-school activities will be deemed optimal. Finally, on the measure of *Mandatory* targeting the 'Tiger-mom' mentality, it is shown that young teens in general, gifted ones in particular, wish to be their own decision makers of their after-school plans. This result is specifically evident and significant as indicated in Table (II-a) for all students. As somewhat expected, the 'participative' parenting in a teen's life is rather unpopular and discouraged, given that those youngsters are experiencing their adolescent transition, during which they seemingly would prefer to, just like their parent(s) or an typical adult, decide what is 'good for them'. As teens are able to make choices and take sovereignty, it is believed that they would be more responsible and behave in such a way reveal affirmative grade and learning outcomes.

Looking at the quantitative comparison between all students and those identified as AES pupils shows that AES students' baseline GPA (i.e. the *Constant* term without any extra-curriculum factors) averages 3.2344 out of 4.0 points. This could be translated into a standard grade range of 'B' or 'B-', as it is 0.349 points higher than those of average teenage students from all samples, an average grade of 'C+' or possibly 'B-'. From a suggestive rather than decisive standpoint, as seen in Table (II-a), engaging in one extra-curricular activity by a student is supposed to add 0.0566 points to his/her GPA, *ceteris paribus*. Such positive correlation between GPA and extra-curricular activities is also echoed in the performance of the AES equivalents by 0.0934 points, which is almost double. On the other hand, as indicated in Table (II-a), academic subject-related (e.g. math, science, or language arts) activities after school are said to negatively and significantly affect an average student's GPA by 0.205 points, as opposed to half (or 0.0132) of the magnitude affecting the GPA of AES students.

The number of after-school events is an influential factor to all teenagers at school, as it creates a 0.0788 (of Table (II-a)) positive grade effect to an average student. Seemingly, some is better than none; however, cautiously speaking, more may not always be better than fewer; it needs to depend on a teen's ability to handle and manage a heathy balance between his/her school work and the extra-curricular plans.

On average, many teenagers responded that they routinely participate in after-school activities such as sports, music, arts, dance, and/or activity clubs, which is considered socially beneficial. They use these meetings and gatherings to relax and 'sneak out' from their 'endless' academic anticipation, hang out with their friends, build new friendships, and exchange information, although such positive effect produces no robustness to AES students with in fact a lower (0.0552) score. While 'Tiger-mom's' *mandatory* determination on after-school extra curricula may significantly (at the 1% significance level) deter an average teenager's GPA by 0.3491 points (as reported in Table (III-a)), it could have a greater affect (0.5166) on that of an AES student.

From the regression results of both the all-student group and the AES group, it is evident that there is statistical significance more often on the former group than its AES counterpart. Intuitively, such a comparative distinction could be due to the so-called 'self-determination theory' found in gifted students (see Clinkenbeard, 2012; Garn et al., 2010). In general, AES or gifted students are believed to be more motivated and self-determined as compared to their non-AES peers. They could be determined and even obstinate on what they decide. Agreeing with their decision is more likely to positively impact their performance (0.0934 *ExtraCur* estimate in Table (II-b) vs. 0.0566 in Table (II-a) for all students). Going against their wishes may sometimes result in a larger counter-impact (-0.5166 *Mandatory* estimate in Table (II-b) vs. -0.3491 in Table (II-a) for all students). Since they tend to be self-driven and decisive, the authoritative command from their parent (e.g. by the *Mandatory* estimate) and school personnel may not always invite noticeable effectiveness and creditability (as shown by the overall insignificant results in Table (II-b)).

5 Concluding Remarks

'Tiger-mom', more commonly known as 'helicopter' parenting in Western world, was, is, and will remain a popular but debatable topic in child-raising. The primary purpose of 'Tiger-mom' parenting is to 'hover' over and 'shape' a child to be a high-grade achiever, multi-talent performer, and eventually a name-brand college/university goer, although it could be quite common that these kids do not always meet their parental aspirations. Inspired by such mismatch between parental expectation and actual behavioral outcome, this study is designed to evaluate middle-school students' academic performance with their engagement and choices of after-school extra-curriculum.

In sum, the empirical results reveal that, first, teenage students who engage in extra-curricular activities are inclined to experience grade enhancement, although such extra curricula should be non-academic-subject-oriented. In general, as reflected by student response to a survey, after-school activities reiterating academic subjects seem to cause stress and produce contradictory grade effects; second, to enhance school performance, some extra-curriculum after school is better than none. Nevertheless, this interpretation needs caution given that students who overcommit to extra-curricular activities and/or prioritize extra curricula over academics can end up sacrificing their grades.

Third, and most importantly, most middle-school teens consider mandatory choice of after-school activities by their parents to be grade deteriorating, which implies that 'Tiger-mom' parenting is discouraged in students' off-campus life. These students prefer sovereignty and the ability to make their own decisions, through which they are more accountable as indicated by their school learning outcome. Given the above findings, in order to assist their teens in achieving high scholastic performance while enjoying a balanced academic-/after-school life, modern parents are advised to be cautious when forming their expectations, practicing their parentings, and properly working with their teenagers for their needs. Similar advice can also be taken by school administrators and teachers in the class environment.

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Table (I): Demographic Statistics – Two Middle Schools from Las Cruces Public Schools (LCPS), Las Cruces, New Mexico

TTL participants = 1,098	***Male (M)***	***Female (F)***	***Complete Response %***	***Incomplete Response %***	***AES (M + F)***		***AES (M+F) Un-known***
Gender	**545**	**550**	**57.2**	**42.8**	**Yes**	**No**	**10.7%**
Age: 12	175	170	53.6	46.4	66	232	10.5%
Age: 13	187	176	60.1	39.9	58	264	10.1%
Age: 14	122	129	61.4	38.6	38	175	13.1%
Age: Other	61	75	59.6	40.4	25	80	7.1%
Grade: 6th	172	184	52.0	48.0	68	247	8.4%
Grade: 7th	204	192	56.8	43.2	58	280	12.9%
Grade: 8th	165	170	63.3	36.7	62	233	10.6%
Grade: Other	4	4	100.0	0.0	-	-	-

Table (II-a): OLS Regression Results – All Students

Dependent Variable: Grade		Number of observation: 628	
Parameters	**Estimates**	**Standard Error**	**t-value**
Constant	2.8854**	0.0892	32.3627
ExtraCur	0.0566	0.1113	0.5090
ActSubject	-0.2050*	0.0973	-2.1068
ActNum	0.0788**	0.0235	3.3493
Mandatory	-0.3491**	0.1315	-2.6550
Overall standard error	0.8734		
F-test	7.4423**		
R^2	0.0456		

**: 1% of the significance level; *: 5% of the significance level.

Table (II-b): OLS Regression Results – AES Students

Dependent Variable: Grade		Number of observation: 141	
Parameters	**Estimates**	**Standard Error**	**t-value**
Constant	3.2344**	0.2615	12.3678
ExtraCur	0.0934	0.2934	0.3182
ActSubject	-0.0132	0.1612	-0.0822
ActNum	0.0552	0.0344	1.6024
Mandatory	-0.5166	0.5068	-1.0194
Overall standard error	0.7489		
F-test	1.7256		
R^2	0.0483		

**: 1% of the significance level; *: 5% of the significance level.