**Associations Between Perceived Parental Effort and Outcome Goals and
East Asian Students' Academic Adjustment**

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Ethics Approval: Research protocol and all measures in this study followed the ethical principles established by the Taiwanese Psychological Association (TPA), which is similar to APA ethical principles and comparable with Helsinki Declaration, and were approved by the human subject committee of the department of psychology, National Taiwan University.

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Abstract

In many East Asian societies, both Confucian emphasis on effortful learning and the instrumental value of academic grades for attaining social privilege have greatly impacted people's achievement goals. In this study, we examined whether perceived parental effort goals and outcome goals would function independently from the often noted mastery and performance goals in prior Western literature in explaining East Asian college students' academic dedication and self-handicapping. The reliability and the construct, concurrent, and incremental validity of newly developed scales for perceived parental effort goals and outcome goals were tested using two samples of Taiwanese students ($Ns = 252, 269$; 47.6% and 61.7% female; mean age = 20.44, 19.33 years). Results of confirmatory factor analyses supported the four-factor model of effort, outcome, mastery, and performance goals being distinct goal constructs. Hierarchical regression for examining the incremental validity of effort goals and outcome goals indicated that, above and beyond the influence of perceived parental mastery and performance goals, perceived parental effort goals predicted greater self-handicapping behaviors. The inverse effect of perceived parental effort goals in predicting academic adjustment may be explained by students' sense of academic helplessness, which can be cultivated by prolonged exposure to such parental goals. The regression analyses also found perceived paternal, but not maternal, outcome goals predicted stronger academic dedication, suggesting that East Asian students may interpret paternal interest in test scores as concern for children's future social and economic wellbeing and perceive similar maternal interest with apprehension.

Keywords: self-handicapping, East Asian, effort goals, outcome goals, perceived parental goals

Highlights

- Studying hard and gaining good academic grades have special historical meanings in East Asian societies.
- East Asian adolescents perceived parents to hold academic effort and outcome goals distinct from mastery and performance goals.
- Perceived parental effort and outcome goals were found to uniquely predict East Asian adolescents' learning motivation.
- Perceived parental effort goals predicted greater but not less self-handicapping tendency in East Asian adolescents.
- Perceived paternal, but not maternal, academic outcome goals predicted greater academic dedication in East Asian adolescents.

Associations Between Perceived Parental Effort and Outcome Goals and East Asian Students' Academic Adjustment

Parents play a significant role in facilitating or hindering their children's motivation. The achievement goals that parents emphasize for their children (shortened to "parental goals" in this paper) have been found to predict children's achievement motivations and learning behaviors (e.g., Friedel et al., 2007; Gonida et al., 2007). While different types of achievement goals have been defined and assessed in a variety of different ways (Elliot & Hulleman, 2017), prior research mostly assessed two types of parental goals through children's report of their parents' purposes for pushing them to engage in achievement-related behaviors (e.g., Gonida et al., 2007). Parents who emphasize self-improvement and skill learning are regarded as holding parental mastery goals (PMGs) whereas those who care about whether their children's academic performance is inferior or superior to that of other children are regarded as holding parental performance goals (PPGs). PMGs have been found to correlate positively with students' adaptive achievement attitudes and behaviors such as classroom engagement and associate negatively with students' maladaptive behaviors such as self-handicapping; while PPGs have been found to positively relate to students' maladaptive coping strategies and behaviors (Friedel et al., 2007; Friedel et al., 2001; Gonida et al., 2007; Hatzikyriakou et al., 2019)

The individual differences of achievement goals depend on subjective and idiosyncratic definitions of achievement and/or success, which are partly shaped by culture (King & McInerney, 2014; Urdan & Kaplan, 2020). Although the binary mastery–performance taxonomy of parental goals has been applied in numerous research conducted in both Western and some highly Westernized East Asian societies (e.g., Korea: Jiang et al., 2014; Taiwan: He et al., 2015), cross-cultural studies indicated that parental beliefs of why and how to attain academic accomplishment vary largely based on the particular cultural meaning of achievement (Feng et al., 2020; Ng et al., 2013; Stevenson et al., 1990). Specifically, being effortful in academic work and gaining economic, political, and social privilege through academic achievement are two aspects that are often emphasized in parenting practices among East Asian societies such as in China, Korea, Japan, and Taiwan. In this study, we examined academic effort and outcome as two types of parental goals to determine whether children in East Asian societies perceive these goals separately from and in addition to those of mastery and performance.

Parental Effort Goals

In the Western literature, effort has not been regarded as an independent achievement goal. However, in the

Confucian tradition, diligence is considered a major and powerful means that can compensate for incompetence and can be used to cultivate the self to proximate intellectuals' ideal state of sagehood (Li, 2003), which is deemed by Confucius to be the moral perfection worth pursuing for all human beings (Lee, 1996). That is, the strong emphasis on effort in Confucian philosophy is not based on a simple formula of diligence leading to mastery or success; rather, it is rooted in the moral standard that Confucius believed every intellectual should pursue. According to this philosophy, "working hard with unrelenting assiduity" is regarded as the core concept of learning as well as a moral imperative, not something one can choose to abide by or violate freely. Even contemporary Chinese mothers believe that children's learning reflects morality more than do European American mothers (Ng et al., 2013).

In concordance with Confucian teachings, empirical studies have documented that perseverance, hardship, and diligence are highly endorsed by parents in contemporary societies with Confucian heritage. For example, diligence was the most often-mentioned academic-related attribute of an ideal child by Hong Kong parents (Shek & Chan, 1999). Taiwanese mothers brought up learning virtue themes (e.g., practice, persistence, and concentration) in their conversations with children ages 6–10 more frequently than their European American counterparts (Li et al., 2014). Additionally, East Asian parents also tended to attribute their children's academic performance to effort (Kim & Fong, 2013; Stevenson et al., 1990).

However, in prior research, effort was rarely, if ever, considered an achievement goal separable from mastery goals; rather, it was often regarded as an indicator or a means in the process of reaching the goals of mastery. For example, parental emphasis on working hard (Friedel et al., 2007) or trying hard (Jiang et al., 2014) was included in scales measuring PMGs. In a similar vein, effort was suggested as one of the elements under a higher order factor of mastery (McInerney et al., 1997). Similarly, Qu et al. (2016) viewed working hard as subordinated to maternal process goals for adolescents in the achievement category.

In summary, the presumption of effort in prior literature on achievement goals did not fully capture the traditional view of effort embedded in Confucian cultures, for which the intention to work hard is not necessarily related to achievement, performance, outcome, or mastery, but rather is an imperative attitude for every intellectual. By the same token, East Asian parents' endorsement of effort, which is often referred to in colloquial language as *yònggōng* in Chinese and *benkyo gambatte* in Japanese (Maruyama & Yamamoto, 2018), may not be perceived by children as encouraging their mastery of or performance in academic work. Thus, in the present study we intended to test whether perceived parental effort goals (PEGs) are a distinct construct from perceived PMGs and PPGs and

whether they can uniquely predict East Asian students' learning motivation.

Parental Outcome Goals

In the Western literature on achievement motivation, outcome goals, or the objective of performing well in school and getting good grades, although mentioned in a small number of studies (e.g., Grant & Dweck, 2003; Sideridis et al., 2014), were rarely independently deliberated or investigated. One reason may be that outcome goals may be viewed as part of the objectives of demonstrating competence (i.e., performance goals) or the desire to develop competence (i.e., mastery goals; Grant & Dweck, 2003; Hulleman et al., 2010). Consequently, it was not clear whether outcome goals were a conceptually distinct goal orientation worth investigating separately from performance and mastery goals.

However, in the landscape of East Asian cultures, outcome goals may reveal a type of achievement goal on their own terms. For example, Suizzo and Cheng (2007) found Taiwanese mothers attached greater importance to social power (e.g., prestigious professions and public recognition) as long-term goals and values for their children than did European American mothers. Lee and Bong (2016) found a salient reason for Korean students to study was outcome oriented (e.g. to earn money, to advance to the next school level, to get a good score, to get a job). Lee and Bong also tried to match Korean students' responses to different Western models of goal structures such as those of Midgley et al. (2000), Elliot and McGregor (2001), and Grant and Dweck (2003). Their result indicated that Grant and Dweck's quadchotomous framework, which includes outcome goals as a distinct goal orientation, was most representative for Korean students.

Lee and Bong's (2016) finding may not come as a surprise. Under the tradition of Chinese imperial examination, which had also spread to neighboring Asian countries, such as Vietnam and Korea, educational and academic attainment was regarded as almost the only means to turn around social, economic, and political statuses (Yu & Suen, 2005). Contemporarily, passing the national examinations with superior grades in order to enter top-ranked high schools and universities is still regarded as the most effective means of obtaining a better job and future success in different East Asian societies (Shin, 2012; Tsuneyoshi, 2011; Yu et al., 2018). Under the historical background and social milieu described above, parents with East Asian roots have high expectations regarding their children's school grades (Ng & Wei, 2020; Stevenson et al., 1990), consider academic success to be an important attribute in children (Shek & Chan, 1999), and regard ensuring children's academic success as their own responsibility (Ng & Wang, 2019). The cultural tradition of holding parents responsible for children's

accomplishments, especially in school, has been elevated to the point that Chinese mothers' self-worth is more contingent on their children's performance compared to their western counterparts (Ng et al., 2014).

In summary, contemporary East Asian parents' eagerness to monitor and utilize any available means to boost their children's grades may not be just to demonstrate or develop their children's competence. Instead, they may consider their child's test scores and grades per se as a practical indicator forecasting the child's social and economic wellbeing in the future life. Thus, in this study we examined the construct of parental outcome goals (POGs) in an East Asian society. Specifically, we examined whether Taiwanese students perceive boosting their test scores and grades to be a particular goal their parents hold that is distinct from PMGs and PPGs.

The Current Study

Because East Asian societies place high value on both unrelenting diligence and good grades, we sought to examine whether East Asian children perceive academic effort and outcome as being two types of parental goals distinct from PMGs and PPGs. Toward this purpose, we developed scales for assessing Taiwanese students' perceived PEGs and perceived POGs. Taiwan is an East Asian area that was fostered and nourished in both the historical soil of Confucianism and the ancient tradition of strict examination systems. The national college entrance procedures are the most competitive academic event in Taiwan. Consequently, Taiwanese high school students need to study intensively to prove their learning accomplishment in real scores if they are to enter top-level universities. Under such high-pressure circumstances, individual differences in parental attitudes toward children's academic work are easily revealed. Therefore, we invited Taiwanese college students to recall and rate their perceptions of their parents' goals during their high school period. Although examining students' recollections of parental goals a few years after the relevant events (as opposed to immediately afterward) may pose risks of memory distortion, it holds the advantage of providing the students' general impressions but not the specifics of those events.

After examining the factor structure and reliabilities of the newly developed perceived PEG and POG scales, we examined whether perceived PEGs and POGs are goal constructs distinct from perceived PMGs and PPGs. We expected a four-factor structure of perceived parental goals, including PEGs, POGs, PMGs, and PPGs, would better explain the data set than would a structure in which PEGs or POGs are combined with PMGs or PPGs (Hypothesis 1). Although some researchers have suggested that performance goals can be divided into approach and avoidance types (e.g., Mageau et al., 2016), Kim et al. (2010) found that PPGs are not distinguishable into approach and

avoidance goals among East Asian adolescents in Korea. Therefore, we only assessed PPGs as a whole and did not separate PPGs into two types.

We also tested the concurrent validity of the two scales by examining the predictability of perceived PEGs and POGs toward children's adaptability in academic contexts. Qu et al. (2016) suggested that contemporary East Asian adolescents were more willing to accept goals set by their parents than were their Western counterparts. Based on the empirical finding of Qu et al. and Confucian teachings of filial piety, we expected that Taiwanese adolescents would react compliantly to perceived parental demands on effort (i.e., PEGs) and test scores (i.e., POGs) and that such perceived goals would be positively associated with adaptive responses (e.g., academic dedication) and negatively associated with maladaptive responses (e.g., self-handicapping behaviors) in academic contexts (Hypothesis 2). By the same token, we also anticipated evidence of incremental validity of perceived PEGs and perceived POGs, which would show additional and unique accountability for the variance of the aforementioned adaptive and maladaptive responses in academic contexts (Hypothesis 3).

Method

Participants

Two independent samples of Taiwanese students from one research-oriented university in Taipei participated in the study to earn extra credits in their psychology courses. Sample 1 consisted of 252 students (120 females; mean age = 20.44 years, $SD = 2.14$). Of those, 110 students (40 females; mean age = 20.58 years, $SD = 1.95$) completed the measurements twice at a two-week interval. For Sample 2 ($N = 269$, 166 females; mean age = 19.33 years, $SD = 1.00$), we only recruited students who were both younger than 22 years of age and in their freshman, sophomore, or junior years to alleviate the possible impacts of memory decay and distortion in the participants' recollections about their parents' goals during the high school period. According to Darlington and Hayes (2017), the rule of thumb for the required sample size of regression analysis is either to include 10 times of the number of regressors or to exceed the number of regressors by 40 or more. Nevertheless, they also noted that "the best rule of thumb for sample size selection is simply that more is better." Thus, we recruited as many participants as we could.

Procedure

Participants in Sample 1 filled out the perceived PEG and POG scales using a paper-and-pencil format. Participants in Sample 2 first filled out questionnaires that assessed their self-handicapping tendencies and academic dedication followed by survey scales for the perceived PEG, POG, PMG, and PPG. Approximately half of the

participants in Sample 2 ($n = 136$; 85 females) used the paper-and-pencil format, and the rest ($n = 133$; 81 females) used an online format (Google Forms). Since participants' responses did not significantly differ based on the format, $F(48, 206) = 0.86$, Wilk's $\Lambda = .83$, $p = .721$, we combined the responses from the two formats for subsequent analyses. The research materials and the procedure were approved by the Human Subject Committee of the affiliated department of the authors, following the code of ethics established by the Taiwanese Psychological Association, which is comparable with Helsinki Declaration.

Measures

Perceived Parental Goals

We first generated seven items describing the students' perceptions of parental demands and wishes regarding their children's diligence in schoolwork (i.e., PEGs) and 10 items describing parental concerns and involvement regarding their children's exam grades (i.e., POGs). The items were adapted from prior literature such as the interview results documented in Li et al. (2014), and Yeh et al. (2006). We also added items adapted from measures used in Grant and Dweck (2003), McInerney et al. (1997), and Jiang et al. (2014), as well as examples of goals reported in Qu et al. (2016) and social incidents reported in Taiwanese newspapers. We then removed three of the original PEG items because they contained mixed descriptions involving parental concerns on both children's diligence and children's poor grades. Consequently, the first version of the perceived PEG scale consisted of four items (e.g., "No matter how hard I studied, my mother/father would still demand that I study even harder").

For the perceived POG scale, four of the initial 10 items were removed because they did not exclusively measure parental concerns about grades but were confounded with performance goals, which is related to parental concerns about children's academic grades compared with those of their peers. Thus, the resulting perceived POG scale consisted of six items (e.g., "Before I received my test scores, my mother/father would often remember to inquire about the results"). Additionally, the six-item PMG scale and the five-item PPG scale from the "Perceptions of Parents, Home Life, and Neighborhood" assessment in the Patterns of Adaptive Learning Survey (PALS; Midgley et al., 2000) were administered to participants in Sample 2.

For each of the above scales, participants rated how often the situations depicted in the items had happened during their time in high school, using a 5-point Likert-type scale (1 = *never*, 5 = *always*). In Sample 1, 244 and 246 participants completed the paternal version of the perceived PEG scale and perceived POG scale, respectively, and 250 completed the maternal versions of both scales. Among them, 106 and 109 participants completed the paternal

version and the maternal version twice, respectively. In Sample 2, 257 and 267 participants filled out the paternal and the maternal versions of the four scales, respectively.

Maladaptive Responses in Academic Contexts

The assessment of academic self-handicapping strategies in PALS (Midgley et al., 2000, translated into Chinese by Lay & Tsai, 2005) was adopted as the indicator for students' maladaptive responses in academic contexts. The scale consists of six items rated on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*) that describe strategies used by students to create circumstances that, if subsequent performance was poor, could be regarded as the cause of the poor performance rather than a lack of ability.

Adaptive Responses in Academic Contexts

The academic dedication scale (Chang & Lay, 2020) was used to assess students' adaptive responses in academic contexts. Using a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), students rated two statements: "I need to do my schoolwork to my full potential at all times" and "I believe that I should be fully involved and try my best on schoolwork." Results of a preliminary study indicated acceptable internal consistency (Cronbach's $\alpha = .77$) and test-retest reliability, $r(108) = .71$.

Academic Ranking

To exclude the confounding effect of individual academic achievement on self-handicapping and academic dedication, each student's academic ranking when entering college was calculated. Specifically, the college entrance system in Taiwan generally separates college majors into three categories: (a) liberal arts, social sciences, business, and law; (b) natural science, computer science, and engineering; and (c) agriculture, life science, and medicine. The minimum score on the entrance examination that is allowed to enter a particular academic program is comparable with that of any other program within the same category. Thus, we assigned each participant an academic ranking score, from one to five, according to the rank order of the minimum entrance score for the specific department within this particular university to which each participant belonged.

Data Analyses Plan

First, analyses of the item-factor composition of the newly developed perceived PEG and POG scales were conducted separately for the maternal and paternal versions using data collected from Sample 1. To examine the factor structure of the four-item perceived PEG scale and the six-item perceived POG scale, exploratory factor analysis (EFA) with principal axis factoring as the factor extraction method and promax rotation as the oblique

rotation method was conducted. Decision of factor retention was based on the results of scree plot and parallel analysis as well as conceptual clarity. Item deletion was based on two criteria: Items with factor loading (i.e., pattern coefficient) greater than .30 (Smith & McCarthy, 1995) on only one factor were retained; items that did not load on their hypothesized factor were removed. Second, Pearson correlation coefficients and Cronbach's alphas were calculated to demonstrate the test-retest reliabilities and internal consistency reliabilities of the final versions of the perceived PEG and POG scales.

Next, using Sample 2, construct validity of the perceived PEG and POG scales (Hypothesis 1) was established via a series of confirmatory factor analyses (CFAs) using Mplus (version 7.3; Muthén & Muthén, 1998–2012). Goodness of fit of each model was evaluated by indices (Kline, 2016; MacCallum et al., 1996; Hu & Bentler, 1999) of the comparative fit index (CFI; values greater than .90 and .95 deemed acceptable and excellent fit, respectively), the root mean square error of approximation (RMSEA; values lower than .08 and .05 deemed acceptable and good fit), and the standardized root mean square residual (SRMR; values lower than .08 deemed the cut-off point). For model comparison, lower values of Akaike information criterion (AIC) indicated a relatively better model fit.

Concurrent validity of the perceived PEG and POG scales (Hypothesis 2) was then examined by testing their Pearson correlation coefficients with responses of academic dedication and academic self-handicapping. The incremental validities (Hypothesis 3) of the two scales were then established in the next step. Specifically, hierarchical linear regression analyses were conducted to examine the predictability of perceived PEGs and POGs to the two academic-adaptation variables, controlling for perceived PMGs and PPGs. Effect size measure of Cohen's f^2 for Case 1 (Cohen, 1988) was calculated to indicate the unique contribution of perceived PEGs and POGs to criterion variance. According to Cohen's guideline, $f^2 = .02$ denotes a small effect size and $f^2 = .15$ denotes a medium effect size. We did not include students' sex ($ts[267] = -0.36, -1.09; ps = .716, .278$) and academic rankings ($Fs[4, 264] = 0.36, 1.02; ps = .839, .398$) in the regressions because preliminary analyses indicated no group difference in the academic-adaptation variables. All of the above analyses, with the exception of CFA, were conducted in SPSS 22.0.

Results

Internal Structure and Reliabilities of the Perceived PEG and POG Scales (Sample 1)

An EFA was first conducted on the ten items of the original perceived PEG and POG scales. The Kaiser–Meyer–Olkin measures were .86 and .86, and the results of Bartlett's tests were significant ($\chi^2s = 1094.98, 1158.08$;

$ns = 247, 241; ps < .001$) for both the maternal and paternal versions, indicating that the sample and its correlation matrix were appropriate for EFA. Two factors were retained based on the results of factor retention methods. One item from the perceived POG scale was deleted because it did not load on the expected factor. A second EFA on the remaining nine items revealed a two-factor solution that accounted for 62.35% and 65.12% of the total variance in the maternal and the paternal versions, respectively. The rotated factors were correlated ($r_s = .61$ and $.56$ for the maternal and paternal versions, respectively). All items had pattern coefficients of $.30$ or higher. See Table 1 for the pattern and the structure coefficients of EFA for the perceived PEG and POG scales and the means and standard deviations of the included items.

 Insert Tables 1 and 2 about here

Test-retest reliability coefficients were $r(107) = .84$ and $r(104) = .84$ for the maternal and paternal versions of the four-item perceived PEG scale. In the same vein, reliabilities for the two versions of the five-item perceived POG scale were $r(107) = .91$ and $r(105) = .86$. Internal consistency reliabilities estimated by using Cronbach's alphas are shown in Table 2.

Hypothesis 1: Construct Validity of the Perceived PEG and POG Scales (Sample 2)

The first set of CFA was conducted to replicate the two-factor structure of the two scales established using Sample 1. The second set was to test whether PEGs and POGs are different constructs of parental goals from PMGs and PPGs.

Prior to conducting the CFAs, the normality assumption was tested in SPSS. Although none of the items' skewness or kurtosis indices exceeded the criteria recommended by West, Finch, and Curren (1995; skewness ≤ 2 , kurtosis ≤ 7), the omnibus test of multivariate normality based on DeCarlo's (1997) SPSS macros indicated violation of the normality assumption. Therefore, as a more conservative approach, all CFA models were fitted using the Satorra-Bentler scaled chi-square test statistic ($SB\chi^2$). To save space, in the following, the factor structures are presented using abbreviations based on the goal type. For example, a four-factor model of PEGs, POGs, PMGs, and PPGs is abbreviated as E/O/M/P while a one-factor model that includes all of the above four parental goals is presented as EOMP, and so forth. As shown in Table 3, in the first set of analyses, for both the maternal and the paternal versions, the two-factor model of PEGs and POGs (E/O) fit the data better than the one-factor model for the

two scales (EO); the two-factor model itself also reached an acceptable or a good fit. That is, the first set of CFAs indicated that PEGs and POGs are two different constructs.

Insert Table 3 about here

Before proceeding to the second set of CFAs, a two-factor model of PMGs and PPGs (M/P) was examined to confirm that PMGs and PPGs are distinct goal constructs in the Taiwanese sample. However, the results of the analyses did not show acceptable fit of the M/P model for either the maternal version, $SB\chi^2(43, N = 267) = 180.06, p < .001$, CFI = .85, SRMR = .11, RMSEA = .11 (90% CI [0.09, 0.13]), or the paternal version, $SB\chi^2(43, N = 257) = 160.01, p < .001$, CFI = .88, SRMR = .10, RMSEA = .10 (90% CI [0.09, 0.12]). To minimize the impact of the above poor fit on subsequent CFAs, the M/P model was statistically modified to meet the criterion that at least one index showed good fit, with the others indicating acceptable fit. After correlating four pairs of error items ($\delta_{PMG2, PMG3}$; $\delta_{PMG4, PMG6}$; $\delta_{PPG2, PPG3}$; and $\delta_{PPG1, PMG2}$) for the maternal version and three pairs of error items ($\delta_{PMG2, PMG3}$; $\delta_{PMG4, PMG6}$; and $\delta_{PPG2, PPG3}$) for the paternal version and simultaneously loading one item on the PMGs and PPGs for both the maternal (λ on PPG: 0.52; λ on PMG: -0.34) and paternal versions (λ on PPGs: 0.62; λ on PMGs: -0.45), the resultant adjusted model reached acceptable fit or good fit for both the maternal version, $SB\chi^2(38, N = 267) = 73.65, p < .001$, CFI = .96, SRMR = .07, RMSEA = .06 (90% CI [0.04, 0.08]), and the paternal version, $SB\chi^2(39, N = 257) = 77.00, p < .001$, CFI = .96, SRMR = .06, RMSEA = .06 (90% CI [0.04, 0.08]).

Based on the confirmed two-factor model of PMGs and PPGs and that of PEGs and POGs, two two-factor models (EM/OP and EP/OM), four three-factor models (E/OM/P, E/M/OP, O/EM/P, and O/M/EP), and one four-factor model (E/O/M/P), were examined using CFAs (Set 2 in Table 3). Results indicated that, for both the maternal and the paternal versions, the four-factor (E/O/M/P) model reached acceptable fit and had the best fit to the data among all the CFA models in Set 2. That is, the model of perceived PEGs, POGs, PMGs, and PPGs as four distinct constructs was supported.

Hypothesis 2: Concurrent Validity of Perceived PEG and POG Scales Using Academic Dedication and Self-Handicapping as Criterion Variables (Sample 2)

Table 4 shows the correlation coefficients between perceived parental goals and students' academic attitudes and behaviors. Perceived PEGs were positively correlated with students' self-handicapping behaviors on both the

mother's and father's side. No correlation was found between perceived PEGs and academic dedication or between perceived POGs and students' self-handicapping behaviors. Although higher perceived POGs on the father's side were associated with higher academic dedication, there was no such correlation on the mother's side.

Insert Table 4 about here

Hypothesis 3: Incremental Validity of the Perceived PEG and POG Scales (Sample 2)

To examine whether perceived PEGs and POGs are associated with students' academic adjustment over and beyond the effects of perceived PMGs and PPGs, analyses of hierarchical regressions were conducted. Perceived PMGs and PPGs were entered in the first step. As shown in Tables 5 and 6, similar to the results of the correlation analyses, perceived PMGs predicted students' academic dedication positively ($\beta_s = 0.17, 0.14$; $t[264] = 2.70, t[254] = 2.16$; $ps = .007, .031$) and perceived PPGs predicted students' self-handicapping behaviors positively ($\beta_s = 0.19, 0.28$; $t[264] = 3.14, t[254] = 4.40$; $ps = .002, .000$). Additionally, when the effects of PPGs were simultaneously accounted for, perceived PMGs negatively predicted self-handicapping behaviors on both the mother's ($\beta = -0.13$, $t[264] = -2.05$, $p = .042$) and the father's ($\beta = -0.17$, $t[254] = -2.72$, $p = .007$) side.

In the second step, adding both perceived PEGs and POGs into the regression equation significantly increased the explained variance of students' self-handicapping behaviors both on the mother's, $\Delta R^2 = .07$, $\Delta F(2, 262) = 10.60$, $p < .001$, $f^2 = .08$, and the father's sides, $\Delta R^2_s = .05$, $\Delta F(2, 252) = 7.85$, $p < .001$, $f^2 = .06$. Similar to the results of the correlation analyses, perceived PEGs positively predicted the students' self-handicapping both on the mother's, $\beta = 0.34$, $t[262] = 4.42$, $p < .001$, and the father's sides, $\beta = 0.29$, $t[252] = 3.83$, $p < .001$. While perceived POGs were not related to self-handicapping in the correlation analyses, when considered together with the other three types of perceived parental goals, perceived POGs negatively predicted self-handicapping behaviors (maternal version: $\beta = -0.24$, $t[316] = -2.80$, $p = .006$; paternal versions: $\beta = -0.21$, $t[252] = -2.39$, $p = .018$).

Insert Tables 5 and 6 about here

As to the outcome variable of academic dedication, only the paternal version (but not the maternal version) of perceived PEGs and POGs made an marginally additional contribution to the explained variability of students' academic dedication, $\Delta R^2 = .02$, $\Delta F(2, 252) = 2.88$, $p = .058$, $f^2 = .02$. Specifically, the paternal version of perceived POGs positively predicted students' academic dedication ($\beta = 0.22$, $t[252] = 2.36$, $p = .019$).

Discussion

Both the Confucian teachings regarding effort and the tradition of gaining social status through success in examinations have maintained their significant influences on many East Asian societies even to this day. In this study, we proposed a four-factor model of perceived parental goals and tested whether perceived PEGs and POGs function independently from perceived PMGs and PPGs in explaining East Asian students' learning motivations. Results of CFAs supported Hypothesis 1, indicating that Taiwanese adolescents consider effort and test scores to be distinct types of goals, separate from mastery and performance goals, in the minds of their parents. Moreover, in support of Hypothesis 3, both perceived PEGs and POGs demonstrated additional and unique accountability for criterion variance, over and beyond those of the existing constructs of perceived PMGs and PPGs.

We also examined whether perceived PEGs and POGs were associated with students' adaptive and maladaptive academic responses so as to understand their concurrent validities and whether the direction of the association is as hypothesized. Findings concerning PEGs did not support Hypothesis 2. However, the unanticipated irrelevance of perceived parental enforcement on children's diligence and the adolescents' academic commitment corresponded with prior results that indicated East Asian adolescents regard studying as their personal issue, free from parental monitoring (Yau & Smetana, 1996, 2003). That is, deviating from the cultural tradition of filial piety, East Asian adolescents tend not to adhere to their perceived PEGs and adjust their attitude toward academic learning accordingly.

As to the unexpected results that perceived PEGs predicted stronger but not weaker self-handicapping tendency in college students, given that contemporary East Asian adolescents tended to abide by goals set by their parents (Qu et al., 2016) and still viewed effortful learning as an obligatory duty that one had better follow (Chang & Lay, 2018), the inverse association between perceived PEGs and student's learning behaviors is noteworthy. One possible explanation may be that prolonged intensive parental emphasis on diligence was interpreted by the child as a parental perception of chronic lack of adequate effort, which may, in the long run, lead students to believe that

they just cannot reach a satisfactory level of industry. This feeling may, in turn, prompt them to find excuses to stop trying in order to avoid the distress accompanied by low self-efficacy in effort making. In other words, the current findings imply that, although effort is often deemed in Confucian societies an obligatory duty that everyone should abide by, East Asian parents need to be cautious while trying to urge their children to work harder, as such attempts may backfire in adolescence.

With respect to perceived POGs, in concordance with Hypothesis 2, when taking the effect of all four parental goals into account, those East Asian students who had sensed their parents' high degree of concern about school grades were less likely to avoid making effort for the purpose of externalizing failure. Whether this significant connection comes from the highly appreciated value of academic attainment shared across generations or from the students' academic determination inspired by their parents' concern about their future success is yet to be tested in future studies. Nevertheless, it should be noted that the predictability of perceived POGs toward a lower degree of self-handicapping tendencies was not revealed in zero-order correlation. This novel result could be due to the existence of a suppression effect (Tzelgov & Henik, 1991) among the perceived parental goals.

Also, in concordance with Hypothesis 2, higher perceived paternal outcome goals were related to higher academic dedication; however, the relation was not significant on the mother's side. It may be that East Asian students are more likely to interpret paternal interest in test scores as concern for children's future social and economic wellbeing and more likely to perceive similar maternal interest as apprehension over her own self-worth (Ng et al., 2014). Consequently, only perceived paternal but not maternal concern about their test scores would inspire Taiwanese students to strive for the best in their schoolwork.

Findings of the relations that perceived PMGs and PPGs had with students' academic dedication and self-handicapping tendencies were generally consistent with those revealed in prior research (e.g., Gonida et al., 2007; Hatzikyriakou et al., 2019). Specifically, higher academic dedication was linked to higher perceived PMGs. Students' self-handicapping tendency was simultaneously predicted by lower perceived PMGs and higher perceived PPGs. That is, although there are cross-cultural differences in the meaning system concerning academic achievement (Feng et al., 2020; Ng et al., 2013; Stevenson et al., 1990), the mastery and performance categories of parental goals originally conceptualized in Western societies are applicable to East Asian parents.

In conclusion, in this study, we moved beyond the binary mastery–performance taxonomy of parental goals and, by demonstrating the discrete role of PEGs and POGs, captured the culture-specific issues of effort and test scores embedded in East Asian families’ socialization processes (Ng & Wang, 2019). The unexpected findings regarding the seemingly counterproductive effect of perceived PEGs and the discordant responses to perceived paternal and maternal outcome goals revealed a pressing need for greater understanding of the context-specific mechanisms that mediate the relations between perceived parental goals and East Asian adolescents’ adaptive and maladaptive academic responses. For example, parents’ tendency toward autonomy support versus psychological control may channel children’s responses in opposite directions (Gonida & Cortina, 2014).

Limitations

Several limitations of this study merit discussion. First, all of the participants had survived the painstaking process of preparing for the competitive college entrance exam in Taiwan. The homogeneity of the participants may have reduced the variance of the measures regarding adaptive and maladaptive academic responses and thus may have contributed to the relatively modest effect sizes for the increased criterion variance explained by the constructs of perceived PEGs and POGs. However, given that the students reported their own responses in academic settings prior to reporting their perceptions of parental goals, the assessment procedure should have prevented the students’ impressions of their parental goals from priming their reporting of their own learning behaviors and academic attitudes. Consequently, the current findings regarding incremental validity still merit attention.

From another perspective, findings from this study reflect the beliefs and responses of those who have embraced (and thrived in) the contemporary educational system in Taiwan. The constructs of PEGs and POGs and their correlates indeed may not represent the entire population; however, they should still reflect contemporary mainstream Taiwanese adolescents and are probably typical of adolescents in many other East Asian countries.

Second, in this study, college students were asked to recall parental goals from high school. Although this method holds the advantage of reflecting the students’ general impressions of their parents during the peak of academic pressure and thus is relatively unaffected by more recent and more incidental parent–child interactions, the external validity may be limited, and this result may not be generalizable to individuals of other ages. Consequently, the factor structure of perceived parental goals may need to be cross-validated with samples of children and adolescents of various ages. Moreover, it remains unclear whether the four-factor model matches parents’ own goal

structure. Therefore, it is worth investigating the correspondence among parents' goal structures, their children's perceptions of those structures, and the children's own goal structures.

Finally, the correlational design with data collected simultaneously has made causal inference impossible in this study. As a resultant, there are two equally plausible interpretations. One is that the effects of perceived PEGs and POGs have on academic adjustment during high school carry over to college, and the other is that college students' academic adaptations lead them to reinterpret the ways in which their parents treated them in high school. Longitudinal research is needed to clarify the directions and mechanisms of these associations.

Despite the above limitations, results of this study contribute to the literature by revealing that PEGs and POGs are distinct parental goals that are linked to East Asian students' learning motivation. Moreover, paternal and maternal PEGs and POGs do not always associate similarly with their children's academic responses, and the direction of the association may not always be explainable by East Asian students' compliance and filial piety. As a reliable and valid assessment tool for PEGs and POGs is now available, future studies should systematically investigate the mechanisms underlying the relation between perceived parental goals of fathers and mothers and students' learning behaviors as well as their emotions, implicit theories, and adjustment.

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Table 1

Pattern and Structure Coefficients of EFA for the Perceived PEG and POG Scales and the Means and Standard Deviations of the Included Items (Sample 1)

Item	Mother						Father					
	Factor 1		Factor 2		<i>M</i>	<i>SD</i>	Factor 1		Factor 2		<i>M</i>	<i>SD</i>
	P	S	P	S			P	S	P	S		
Factor 1: Perceived PEG												
When my mother/father saw me roaming around, she/he would hurry me up to go back to studying immediately	.57	.71	.22	.57	3.20	1.13	.76	.84	.15	.58	2.67	1.20
My mother/father would tell me to study harder than I normally did.	.87	.89	.04	.56	3.23	1.36	.90	.89	-.01	.50	2.85	1.41
My mother/father would disapprove of my not working hard enough.	1.00	.95	-.09	.51	2.66	1.32	.98	.90	-.14	.41	2.24	1.24
No matter how hard I studied, my mother/father would still demand that I study even harder.	.72	.75	.04	.48	2.18	1.29	.81	.82	.02	.47	2.01	1.23
Factor 2: Perceived POG												
My mother/father would express concerns about my exam grades in school	.09	.53	.73	.78	3.74	1.05	.05	.46	.72	.75	3.09	1.20
My mother/father would ask if I did well when I arrived home after an exam	-.01	.50	.84	.84	3.44	1.30	.15	.55	.72	.80	2.91	1.36
Before I received my test scores, my mother/father would often remember to inquire about the results	-.04	.43	.78	.76	2.69	1.43	-.08	.40	.84	.80	2.17	1.33
My mother/father would reward me particularly when I performed well on a test	.04	.23	.31	.34	2.85	1.33	-.10	.17	.46	.41	2.64	1.35
When my exam score was mistakenly calculated to less than what I deserved, my mother/father would remind me to ask for credit	.05	.24	.32	.35	2.77	1.33	.02	.18	.30	.31	2.51	1.29

Note. EFA = Exploratory Factor Analysis; PEG = Parental Effort Goal; POG = Parental Outcome Goal; P = pattern coefficients; S = structure coefficients. Pattern coefficients

with values of .30 or greater are in bold.

Table 2*Psychometric Properties for Study Variables*

Variables	<i>M</i>	<i>SD</i>	Range	Cronbach's α	Skewness	Kurtosis
Perceived parental goals: Father						
Effort goal	2.44/2.27	1.15/1.05	1.00-5.00/1.00-5.00	.92/.88	0.57/0.76	-0.70/-0.17
Outcome goal	2.67/2.49	0.92/0.88	1.00-5.00/1.00-4.80	.74/.75	0.46/0.31	-0.25/-0.65
Mastery goal	2.66	1.05	1.00-5.00	.89	0.96	-0.97
Performance goal	2.34	0.85	1.00-5.00	.71	0.39	-0.31
Perceived parental goals: Mother						
Effort goal	2.82/2.63	1.11/1.14	1.00-5.00/1.00-5.00	.89/.88	0.19/0.33	-0.95/-0.98
Outcome goal	3.10/2.85	0.89/0.91	1.00-5.00/1.00-5.00	.73/.76	-0.11/0.23	-0.58/-0.78
Mastery goal	2.62	0.95	1.00-5.00	.86	0.14	-0.62
Performance goal	2.54	0.89	1.00-5.00	.73	0.39	-0.41
Student variables						
Academic dedication	4.74	1.24	1.00-7.00	.76	-0.35	0.16
Self-handicapping behaviors	2.52	1.01	1.00-5.83	.84	0.54	-0.20

Note. Values before slash are from Sample 1 ($N = 252$) and values after slash are from Sample 2 ($N = 269$).

Table 3*Fit Indices for Models in Confirmatory Factor Analyses*

Model	SB χ^2	df	CFI	RMSEA (90% CI)	SRMR	AIC
Mother (<i>n</i> = 267)						
Set 1						
One-factor: EO	169.59	27	.85	.14 (.12, .16)	.08	7166.07
Two-factor: E/O	58.10	26	.97	.07 (.05, .09)	.05	7033.86
Set 2						
Two-factor: EM/OP	659.85	164	.77	.11 (.10, .12)	.13	16006.20
Two-factor: EP/OM	662.48	164	.77	.11 (.10, .12)	.13	16009.65
Three-factor: EM/O/P	635.24	162	.78	.11 (.10, .11)	.13	15982.23
Three-factor: EP/O/M	389.91	162	.89	.07 (.06, .08)	.08	15706.84
Three-factor: E/OM/P	596.55	162	.80	.10 (.09, .11)	.12	15939.08
Three-factor: E/OP/M	343.80	162	.91	.07 (.06, .07)	.07	15655.33
Four-factor: E/O/M/P	320.31	159	.92	.06 (.05, .07)	.07	15634.87
Father (<i>n</i> = 257)						
Set 1						
One-factor: EO	161.52	27	.85	.14 (.12, .16)	.08	6712.81
Two-factor: E/O	65.19	26	.96	.08 (.05, .10)	.05	6592.87
Set 2						
Two-factor: EM/OP	711.70	165	.74	.11 (.11, .12)	.13	15264.68
Two-factor: EP/OM	695.98	165	.75	.11 (.10, .12)	.12	15250.38
Three-factor: EM/O/P	681.47	163	.76	.11 (.10, .12)	.13	15235.06
Three-factor: EP/O/M	419.17	163	.88	.08 (.07, .09)	.09	14938.35
Three-factor: E/OM/P	604.01	163	.79	.10 (.09, .11)	.11	15150.31
Three-factor: E/OP/M	355.64	163	.91	.07 (.06, .08)	.07	14866.68
Four-factor: E/O/M/P	325.51	160	.92	.06 (.05, .07)	.07	14838.38

Note. E = perceived parental effort goals; O = perceived parental outcome goals; M = perceived parental mastery goals; P = perceived parental performance goals; SB χ^2 = Satorra–Bentler scaled chi-squared test; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval; SRMR = Standardized Root Mean Square Residual; AIC = Akaike Information Criteria. All *p* values of SB χ^2 < .001.

Table 4*Intercorrelations Among Study Variables*

Variable	1	2	3	4	5	6
Perceived parental goals						
1. Mastery goals	—	.12	.12*	.27***	.16*	-.10
2. Performance goals	.31***	—	.59***	.64***	-.06	.18**
3. Effort goals	.29***	.52***	—	.60***	-.04	.27***
4. Outcome goals	.40***	.65***	.60***	—	.02	.03
Academic adjustment						
5. Academic dedication	.14*	.04	.06	.16*	—	-.17**
6. Self-handicapping	-.09	.23***	.25***	.07	-.17**	—

Note. Above the diagonal are intercorrelations between perceived maternal goals and academic

adjustment ($n = 267$). Below the diagonal are intercorrelations between perceived paternal goals and

academic adjustment ($n = 257$).

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

Table 5*Hierarchical Regression Analyses on Perceived Parental Goals on the Mother's Side in Predicting Academic Adjustment*

Predictor	Academic Dedication						Self-Handicapping					
	Adjusted R^2	ΔR^2	B	β	SE	p	Adjusted R^2	ΔR^2	B	β	SE	p
Step 1	.02	.03				.017	.04	.05				.002
PMGs			0.22	0.17	0.08	.007			−0.13	−0.12	0.07	.042
PPGs			−0.11	−0.08	0.09	.201			0.22	0.19	0.07	.002
Step 2	.02	.00				.711	.10	.07				.000
PMGs			0.20	0.15	0.08	.016			−0.10	−0.10	0.07	.115
PPGs			−0.14	−0.10	0.12	.244			0.16	0.14	0.09	.083
PEGs			−0.04	−0.04	0.09	.616			0.30	0.34	0.07	<.001
POGs			0.10	0.07	0.12	.428			−0.26	−0.24	0.09	.006

Note. PMGs = parental mastery goals; PPGs = parental performance goals; PEGs = parental effort goals; POGs = parental outcome goals.

Table 6*Hierarchical Regression Analyses on Perceived Parental Goals on the Father's Side in Predicting Academic Adjustment*

Predictor	Academic Dedication						Self-Handicapping					
	Adjusted R^2	ΔR^2	B	β	SE	p	Adjusted R^2	ΔR^2	B	β	SE	p
Step 1	.01	.02				.080	.07	.08				
PMGs			0.17	0.14	0.08	.031			−0.16	−0.17	0.06	.007
PPGs			−0.00	−0.00	0.10	.966			0.33	0.28	0.07	<.001
Step 2	.03	.02				.058	.12	.05				
PMGs			0.12	0.10	0.08	.139			−0.16	−0.17	0.06	.009
PPGs			−0.16	−0.11	0.12	.188			0.31	0.26	0.09	.001
PEGs			−0.05	−0.04	0.09	.624			0.27	0.29	0.07	<.001
POGs			0.31	0.22	0.13	.019			−0.23	−0.21	0.10	.018

Note. PMGs = parental mastery goals; PPGs = parental performance goals; PEGs = parental effort goals; POGs = parental outcome goals.