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Changes in Early Adolescents' Sense of Responsibility to their Parents in the United States and China: Implications for Academic Functioning

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Abstract

This research examined American and Chinese children's sense of responsibility to their parents during early adolescence, with a focus on its implications for children's academic functioning. Four times over the seventh and eighth grades, 825 children (mean age = 12.73 years) in the United States and China reported on their sense of responsibility to their parents. Information on children's academic functioning was also collected from children as well as school records. Although children's sense of responsibility to their parents declined over the seventh and eighth grades in the United States, this was not the case in China. In both countries, children's sense of responsibility was predictive of enhanced academic functioning among children over time.

A key dimension of children's connectedness to their parents is their sense of responsibility to them – that is, children's belief that it is important that they provide psychological or material assistance to their parents (e.g., by meeting their parents' expectations for them or helping with chores around the house). There is now substantial evidence that children's sense of responsibility to their parents is of significance to children's adjustment in the United States among children from a variety of cultural backgrounds (e.g., Fuligni & Pederson, 2002; Fuligni, Tseng, & Lam, 1999) as well as in China in both urban and rural areas (e.g., Fuligni & Zhang, 2004). However, because research on children's sense of responsibility to their parents has focused almost solely on the late adolescent years and beyond, little is known about children's sense of responsibility to their parents before this time. This represents a serious lacuna given that children's connectedness to their parents begins to change as children enter adolescence – at least in the United States (for a review, see Collins & Steinberg, 2006).

Focusing on the United States and China, the current research investigated two forms of children's sense of responsibility to their parents during the early adolescent years: Children's feelings of obligation to their parents and motivation in school to please them. The aims were two fold. The first was to examine how these two forms of children's sense of

responsibility to their parents change as children move into adolescence in the United States and China. The second was to identify the role of American and Chinese children's feelings of obligation to their parents and motivation in school to please them in children's academic functioning in early adolescence. In this context, we focused on the effects of children's sense of responsibility to their parents as they enter adolescence as well as the effects of change in this dimension of children's connectedness to their parents during the early adolescent years.

Trajectories over Early Adolescence

Western scholars have depicted the entry into adolescence as a time when children seek to establish their independence from their parents (for a review, see Collins & Steinberg, 2006). This view of adolescence is echoed among American adults who hold conceptions of adolescence as a time of heightened rebelliousness in which children are oriented toward their peers (Buchanan & Holmbeck, 1998). Such conceptions are supported by evidence that as American children move into adolescence they often increase their focus on their life outside of the family as their relationships with their peers attain heightened significance (e.g., Furman & Buhrmester, 1992; Larson, Richards, Moneta, Holmbeck, & Duckett, 1996). Because the entry into adolescence may be seen as the beginning of a move away from parents in the United States, many American children's sense of responsibility to their parents may decline during this phase of development. In the context of their initial efforts to establish independence from their parents, children may view fulfilling their responsibilities to them as interfering with such independence as well as other responsibilities outside of the family (e.g., to friends or sports teams). Adults may condone to some extent such a decline as they see it as normative.

Given the notion of filial piety which is central in the Confucian philosophy prevalent in China, adolescence may not be a time during which children seek independence from their parents in China. Filial piety involves, among other things, children repaying their family for their efforts in raising them, bringing honor to their family, making sacrifices for their family, and psychologically as well as materially supporting their family (Chao & Tseng, 2002; Ho, 1996). Despite substantial Westernization, particularly in urban areas, it has been argued that much import is still placed on filial piety in contemporary China (Ho, 1996; Wang & Hsueh, 2000). As a consequence, children's progress toward maturity in China may be marked in large part by fulfilling their responsibilities to their parents (Nelson & Chen, 2007; Pomerantz, Qin, Wang, & Chen, 2009; Yu, 1996). As children in China enter adolescence, they may be expected to carry out the duties of filial piety as they begin making their way toward adulthood. Thus, many Chinese children's sense of responsibility to their parents may remain stable or even increase as they move into adolescence.

Although changes in children's sense of responsibility to their parents over the early years of adolescence in the United States and China have not received empirical attention, there is evidence that other dimensions of children's connectedness to their parents change in line with the different conceptions of adolescence in the two countries – deteriorating during early adolescence in the United States, but not China. For example, over the seventh and eighth grades, for American children, their relationships with their parents become of less import in how they define themselves, whereas for Chinese children, such relationships continue to be of import (Pomerantz, et al., 2009). A similar trend is evident during early adolescence in terms of the quality of children's relationships with their parents, such that in the United States children's feelings of closeness to their parents decline (e.g., Buhrmester & Furman, 1987), but in China this is not the case (e.g., Pomerantz, et al., 2009). Moreover, conflict between children and their parents escalates as children enter adolescence in the United States (for a review, see Laursen, Coy, & Collins, 1998), but not China (e.g., Yau & Smetana, 1996).

Implications for Academic Functioning

Although different conceptions of adolescence in the United States and China may cultivate differences in American and Chinese children's sense of responsibility to their parents as they move into adolescence, there is may be variability within both countries in children's sense of responsibility to their parents during this phase of development. Cultural conceptions of adolescence may be transmitted to children through a variety of channels (e.g., the media and parents), but it is likely that not all children are shaped to the same extent by such conceptions. For example, the adults around some children may not buy into cultural conceptions of adolescence and thus may not condone behavior in children that is consistent with them; other forces such as children's temperament (e.g., fearfulness and effortful control) may also be instrumental in the extent to which children adhere to cultural conceptions of adolescence. Given that such variability may exist within the United States and China, a key question is whether differences among children in each country in their sense of responsibility to their parents have implications for children's adjustment in the two countries.

When children lack a sense of responsibility to their parents, they may have difficulty navigating the challenges with which they are faced as they enter adolescence. This may be particularly true in the academic context: In both the United States and China, early adolescence is a time when children's interest in school often wanes (e.g., Wang & Pomerantz, 2009), with other concerns (e.g., friends and hobbies) luring them away from academics (Eccles, et al., 1993; Wigfield & Wagner, 2005). Maintaining a sense of responsibility to their parents may allow children to stay on track in school by orienting them toward their parents' values as well as providing them with purpose in this important context (see Fuligni & Flook, 2005). Although such external motivation is often considered problematic for children (for a review, see Deci, Koestner, & Ryan, 1999), it may be beneficial when children lack internal motivation as is often the case during adolescence. Indeed, external motivators get children engaged even if only superficially, which pays off – at least when deep processing is not necessary (Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005).

In line with this perspective, children's sense of responsibility to their parents as manifest in their feelings of obligation to their family is often associated with enhanced academic functioning in the United States and China during late adolescence as well as the transition to adulthood (e.g., Fuligni & Pederson, 2002; Hardway & Fuligni, 2006). For example, in both countries, the more children feel obligated to their family, the more they value school (Fuligni, et al., 1999; Fuligni & Zhang, 2004). Evidence from the United States indicates that children of European, Chinese, and Mexican heritage who feel obligated to their family spend heightened time on their schoolwork (Fuligni, Yip, & Tseng, 2002; Hardway & Fuligni, 2006). A key issue is whether *changes* in children's sense of responsibility to their parents as they move through early adolescence matter. Declines in children's sense of responsibility to their parents may interfere with both American and Chinese children's academic functioning because they deprive them of a significant source of motivation. It is possible, however, that because such declines are more normative in the United States than China – as they are more consistent with conceptions of adolescence in the United States – the effects may not be as negative in the United States.

Overview of the Current Research

With the aim of providing insight into children's sense of responsibility to their parents as they enter adolescence, the current research investigated this dimension of children's connectedness to their parents during early adolescence in the United States and China. We focused on these two countries because they are likely to have different conceptions of

adolescence that may shape children's sense of responsibility to their parents during this time. We investigated two forms of this dimension of children's connectedness to their parents. First, we examined children's feelings of obligation to their parents which have received much theoretical and empirical attention during the late adolescent years in Fuligni and colleagues' (e.g., Fuligni, et al., 1999; Fuligni & Zhang, 2004) focus on children's feelings of obligation to their family. Second, doing well in school may be a central way for children to fulfill their responsibilities to their parents, particularly in China given the importance of learning in Confucian philosophy (Ho, 1994; Yu, 1996) as well as professional and financial success; thus, we also examined children's motivation in school to please their parents. This more narrow form of children's sense of responsibility to their parents has received almost no attention, but may be of significance to children's academic functioning.

These two forms of children's sense of responsibility to their parents may overlap given that they both represent children's concern with taking their parents' wishes into consideration in making decisions as well as engaging in behavior to support their parents. However, they may not overlap entirely – or even substantially – as not all children may seek to fulfill their obligations to their parents academically (Hardway & Fuligni, 2006), given that not all parents may view children's achievement in school as a priority. Moreover, because children's feelings of obligation to their parents often foster activities that can take time away from school (e.g., household chores and time with parents), such feelings may be less instrumental in promoting children's academic functioning than is children's motivation in school to please their parents.

We began studying children upon their entry into new schools beginning at seventh grade in the United States and China as such entry may be a significant marker of the move into adolescence. Moreover, it may be a time when children's sense of their responsibility to their parents is of much import to their academic functioning given that children's interest in school often wanes during middle school in the United States and China (e.g., Wang & Pomerantz, 2009). Children reported on their feelings of obligation to their parents and motivation in school to please them four times over the seventh and eighth grades. The repeated assessments allowed us to treat the two forms of children's sense of responsibility to their parents as dynamic. In this context, we examined how children's feelings of obligation to their parents and motivation in school to please them change during the early adolescent years in the United States and China.

We also sought to identify the effect of American and Chinese children's sense of responsibility to their parents on four important dimensions of children's academic functioning (for a review, see Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006): Value, self-regulated learning strategies, mastery orientation, and achievement in school. We focused on the role not only of children's sense of responsibility to their parents as children entered seventh grade in a new school, but also the role of change in it over the next two years. Because prior research indicates that the quality of children's relationships with their parents is predictive of their academic functioning (e.g., Furrer & Skinner, 2003; Jacobsen & Hofman, 1997), we took this dimension of children's connectedness to their parents into account in our analyses. This was of import given that the quality of children's relationships with their parents is not only associated with children's feelings of obligation to their family during late adolescence in the United States and China (e.g., Fuligni, et al., 1999; Fuligni & Zhang, 2004), but also changes over time in the two countries in a manner similar to that anticipated for children's sense of responsibility to their parents (Pomerantz, et al., 2009).

Method

Participants

The University of Illinois US-China Adolescence Study started when children entered a new school in seventh grade and concluded at the end of eighth grade in the suburbs of Chicago in the United States and the suburbs of Beijing in China (e.g., Pomerantz, et al., 2009; Qin, Pomerantz, & Wang, 2009). Participants were 374 American children (187 boys and 187 girls; mean age = 12.78 years, $SD = .34$ in the fall of seventh grade), and 451 Chinese children (240 boys and 211 girls; mean age = 12.69 years, $SD = .46$ in the fall of seventh grade). In each country, children attended either average-achieving or above average-achieving public schools in primarily working-class or middle-class areas. Reflecting the ethnic composition of the areas from which they were recruited, American participants were primarily of European descent (88%), with 9% of Hispanic, 2% of African, and 1% of Asian descent. Over 95% of the residents in the areas from which the Chinese participants were recruited were of the *Han* ethnicity (Beijing Municipal Bureau of Statistics, 2005). An opt-in consent procedure was used in which parents provided permission for children to participate. Sixty-four percent of parents in the United States and 59% of parents in China allowed their children to participate.

Procedure

Beginning in the fall of seventh grade, children completed questionnaires during two 45-min. sessions every six months until the end of eighth grade. In total, there were four waves of data collection: Fall of seventh grade (Wave 1), spring of seventh grade (Wave 2), fall of eighth grade (Wave 3), and spring of eighth grade (Wave 4). A trained native research assistant read the instructions and items aloud to children in their native language in the classroom; children responded on their own using rating scales. Attrition over the entire study was 4% (6% in China and 2% in the United States). Ninety-two percent of children had the data required for all the analyses at three or more waves of the study. At Wave 1, children with no missing data differed from those with missing data only in that they had more positive relationships with their parents and obtained better grades, $ts > 2.05$, $ps < .05$.

Measures

The measures were initially created in English. Standard translation and back-translation procedures (Brislin, 1980) were followed to generate the Chinese versions. Linguistic factors were taken into account to ensure that the measures were understandable to children in both countries. For example, there were a few cases in which literal translation of the items from English to Chinese was awkward or ambiguous. In such cases, new items with similar meanings were created in English to replace the old items and then translated into Chinese. Minor modifications were also made to some items so that they would be relevant to the lives of children in not only the United States, but also China.

Sense of Responsibility to Parents

Feelings of obligation to parents: Children's feelings of obligation to their parents were assessed with four items from Fuligni and colleagues' (1999) measure of family obligation and five from Ng, Loong, Liu, and Weatherall's (2000) measure. The items were ones particularly relevant to children during early adolescence in the United States and China. The three components (i.e., respect for the family, current assistance, and future support) of family obligation identified by Fuligni and colleagues were all represented. Given the focus of the current investigation, the items asked about obligation to *parents* (e.g., "How much do you feel you should spend time at home with your parents?" "How much do you feel you should help your parents financially when they get older?"). For each of the nine items,

children indicated how much (1 = *not at all*; 5 = *very much*) they should engage in the activity described. The items were combined, with higher numbers representing greater feelings of obligation (α s = .85 to .93 in the United States and .81 to .88 in China).

Motivation in school to please parents: To assess children's motivation in school to please their parents, six of the items from Dowson and McInerney's (2004) social approval and responsibility scales were modified so that they referred to parents; we also created six additional items. Children indicated how true (1 = *not at all true*; 5 = *very true*) the 12 reasons about why they try to do well at school are of them (e.g., "To please my parents." "To show my parents that I am being responsible."). Their responses were combined, with higher numbers representing greater motivation to please parents (α s = .92 to .95 in the United States and .90 to .94 in China).

Parent-Child Relationship Quality—The quality of children's relationships with their parents was assessed with the Inventory of Parent Attachment (Armsden & Greenberg, 1987). The measure assesses three aspects of the quality of children's relationships with their parents: Trust (e.g., "My parents respect my feelings."), communication (e.g., "My parents can tell when I'm upset about something."), and alienation (e.g., "I feel angry with my parents."). One of the original 25 items which referred to children's relationships with their parents was dropped because its association with the other items suggested it reflected a poor quality relationship in the United States, but not China. Children indicated how true each statement was of them (1 = *not at all true*; 5 = *very true*). Children's responses were combined, with higher numbers representing better quality relationships (α s = .79 to .82 in the United States and .80 to .82 in China).

Academic Functioning

Value: The value children place on school was assessed with a modified version of Pomerantz, Saxon, and Oishi's (2000) measure. Children answered (1 = *not at all*; 7 = *very*) two questions for each of the four major school subjects for which they received grades (i.e., Chinese, math, English, and biology in China; language arts, math, social studies, and science in the United States): "How important is it to you to do well in this subject?" and "How important is it to you to avoid doing poorly in this subject?" The items were combined across the four school subjects, with higher numbers indicating greater value (α s = .91 to .94 in the United States and .88 to .91 in China).

Self-regulated learning strategies: Children's use of five types of self-regulated learning strategies was assessed with 30 items from Dowson and McInerney's (2004) Goal Orientation and Learning Strategies Survey which asks about rehearsal (e.g., "When I want to learn things for school, I practice repeating them to myself."), elaboration (e.g., "I try to understand how the things I learn in school fit together with each other."), monitoring (e.g., "I check to see if I understand the things I am trying to learn."), planning (e.g., "I try to plan out my schoolwork as best as I can."), and regulating (e.g., "If I get confused about something at school, I go back and try to figure it out."). Children rated how true (1 = *not at all*; 5 = *very*) each statement was of them. Their responses were combined, with higher numbers indicating greater use of self-regulated learning strategies (α s = .96 to .97 in the United States and .93 to .96 in China).

Mastery orientation: Children's mastery orientation when approaching schoolwork was assessed with the measure created by Pomerantz, Wang, and Ng (2005). Using a 7-point scale (1 = *not at all*; 7 = *very*), children answered two questions for each of the four major school subjects for which they received grades (see the description of the value measure): "How important is it to you that you learn a lot in this subject?" and "How much do you like

to do difficult work in this subject?" The eight items were combined, with higher numbers indicating greater orientation to mastery ($\alpha = .85$ to $.89$ in the United States and $.75$ to $.82$ in China).

Achievement: Children's grades in the four major subjects in each country (see the description of the value measure) were obtained from school records. In the United States, grades were originally in letters and converted to numbers (0 = F to 12 = A+). In China, grades were originally numerical, ranging from 0 to 100 in one school and from 0 to 120 in the other. To take into account the differences between schools in grading systems, grades in each subject were standardized within schools; they were then combined across subjects, with higher numbers indicating better achievement.

Results

We conducted three sets of Structural Equation Modeling (SEM) analyses using AMOS 7.0 (Arbuckle, 2006). AMOS handles missing data with full information maximum likelihood estimation which provides more reliable standard errors under a wide range of conditions than does not only list- and pair-wise deletion, but also mean-imputation (Arbuckle, 1996; Wothke, 2000). In the first set of analyses, which were preliminary, we sought to establish the equivalence of the measures between the United States and China over the four waves of the research. In the second set, we examined the trajectories of American and Chinese children's sense of responsibility to their parents as they moved through the seventh and eighth grades. The goal of the third set of analyses was to identify the role of children's sense of responsibility to their parents in their academic functioning over time with attention to similarities and differences in the two countries.

Measurement Equivalence

A series of two-group SEM Confirmatory Factor Analyses (CFAs) were conducted to examine the factorial and intercept invariance of the measures between the United States and China over the four waves of the study. Factorial and intercept invariance is essential and sufficient in making valid comparisons of the *associations* and the *means*, respectively (Little, 1997; Steenkamp & Baumgartner, 1998). In each set of CFAs, a baseline (unconstrained) model was compared with constrained models (i.e., factorial and intercept invariance models). The baseline model consisted of the same latent construct repeatedly assessed over the four waves yielding a total of four latent constructs which were allowed to correlate with one another; errors of the same indicators over time were also allowed to correlate when suggested by modification indexes from the CFAs conducted on the sample with no missing data.

For each of the measures, the latent constructs were based on two to three parcels of multiple items determined conceptually when possible, but otherwise randomly. The use of parcels allowed us to build parsimonious models based on solid and meaningful indicators of the core constructs; this enhanced the likelihood of replication in future research with other samples (for the pros and cons of using parcels of items versus individual items, see Little, Cunningham, Shahar, & Widaman, 2002). At all four waves, the randomly determined parcels met the requirements specified by Little and colleagues (2002) for such parcels in that they were internally reliable with alphas above $.60$ ($\alpha = .72$ to $.91$ in the United States and $.64$ to $.89$ in China), with exploratory factor analyses on each parcel at each wave yielding one factor as reflected by a single eigen value over one. The factor loadings and intercepts in the baseline models were freely estimated without any across-time or between-country equality constraints. In the constrained models, the factor loadings and intercepts of the same indicators were forced to be equal across countries and waves separately.

The baseline models for all of the measures fit the data well, χ^2 s ($N = 825$) < 33 , CFIs $> .99$, TLIs $> .97$, RMSEAs $< .04$. A decrease in the TLI or increase in RMSEA of less than .05 from a baseline model to a corresponding constrained model was taken as indicative that the baseline model fit the data as well as the constrained model, suggesting equivalence in factor loadings or intercepts between countries and over time (Little, 1997). Although changes in chi-square are generally advocated for model comparisons (Kline, 2005; McDonald & Ho, 2002), Little (1997) makes the case that changes in the fit indexes are appropriate for evaluating measurement equivalence because such an endeavor is driven by a modeling, rather than statistical, rationale. The decrease in TLI and increase in RMSEA from the baseline models to the corresponding constrained models, χ^2 s ($N = 825$) < 95 , CFIs $> .98$, TLIs $> .96$, RMSEAs $< .06$, were all less than .05 (for prior reports of the measurement equivalence of some of the measures, see Pomerantz, et al., 2009; Wang & Pomerantz, 2009). Thus, all the measures had factorial and intercept invariance across the United States and China as well as across the four waves of the study.

Trajectories over Early Adolescence

As shown in Table 1, there was much stability over time in the two forms of children's sense of responsibility to their parents in the United States (r s = .41 to .64 for feelings of obligation to parents and .34 to .63 for motivation in school to please parents, p s $< .001$) and China (r s = .34 to .54 for feelings of obligation to parents and .40 to .58 for motivation in school to please parents, p s $< .001$). Despite such stability, change was anticipated. Thus, children's sense of responsibility to their parents was examined with a series of two-group SEM growth curve analyses. For each form of children's sense of responsibility to their parents, the baseline (unconstrained) model consisted of two latent constructs which were allowed to freely correlate, with one construct representing the intercept and the other the slope of the growth curve. The factor loadings of the intercept on the observed scores of children's sense of responsibility to their parents at each of the four waves were fixed to 1, with those of the slope fixed to 0, 1, 2, and 3, respectively. By such specification, the intercept indicates children's sense of responsibility to their parents in the fall of seventh grade at the first wave of the study, and the slope indicates the linear rate of change in their sense of responsibility to their parents over the seventh and eighth grades across the four waves of the study. Given that there are sometimes differences in girls and boys' connectedness to their parents in the United States and China (e.g., Fuligni & Zhang, 2004; Pomerantz, et al., 2009), we also examined a model including sex (0 = girl; 1 = boy) as a predictor of both the intercept and the slope of children's sense of responsibility to their parents.

The baseline models fit the data at least adequately, χ^2 s ($N = 825$) < 33 , CFIs $> .97$, TLIs $> .94$, RMSEAs $< .08$. For both children's feelings of obligation to their parents and their motivation in school to please them, there was substantial variance among children in the intercepts (variances = .24, SE = .02, for children's feelings of obligation to their parents and .52, SE = .04, for children's motivation in school to please their parents, p s $< .001$) and slopes (variances = .03, SE = .00, for children's feelings of obligation to their parents and .05, SE = .01, for children's motivation in school to please their parents, p s $< .001$). To examine if some of the variance was due to country, the growth parameters (i.e., intercept and slope) for children's sense of responsibility to their parents were forced to be equal between countries one by one in constrained models. Differential sex differences in the two countries were investigated by forcing the effect of sex on each of the growth parameters one by one to be equal between the United States and China in constrained models. Country differences were determined by significant chi-square differences ($\Delta\chi^2$) between the baseline and constrained models.

Feelings of obligation to parents—The model constraining the intercept of children's feelings of obligation to their parents to be equal between the United States and China, $\chi^2 (N = 825) = 31.80$, CFI = .98, TLI = .97, RMSEA = .04, fit as well as the baseline model, $\Delta\chi^2 = 2.48$, *ns*, indicating that American and Chinese children did not differ in their feelings of obligation to their parents during the fall of seventh grade (see Table 2). However, the model constraining the slope of children's feelings of obligation to their parents to be equal between the two countries, $\chi^2 (N = 825) = 39.38$, CFI = .97, TLI = .95, RMSEA = .05, fit worse than the baseline model, $\Delta\chi^2 = 10.07$, $p < .01$, indicating differential change in children's feelings of obligation over time. As shown in Figure 1 (see also Table 2), over the seventh and eighth grades, American children's feelings of obligation to their parents declined, but those of Chinese children did not. Notably, in both countries, there was substantial variability in terms of children's feelings of obligation to their parents at the beginning of seventh grade (intercept) and change over time in such feelings (slope; see Table 2). Although girls and boys did not differ in their feelings of obligation to their parents during the fall of seventh grade ($\beta s = -.04$ in the United States and China, *ns*), girls maintained such feelings over time to a greater extent than did boys, with no differences between the United States ($\beta = .13$, $p < .001$) and China ($\beta = .20$, $p < .001$), $\Delta\chi^2 s < 1$.

Motivation in school to please parents—For children's motivation in school to please their parents, the model constraining the intercept to be equal between the United States and China, $\chi^2 (N = 825) = 56.53$, CFI = .96, TLI = .92, RMSEA = .06, fit worse than the baseline model, $\Delta\chi^2 = 8.34$, $p < .01$, such that American children were more motivated in school to please their parents than were Chinese children at the beginning of seventh grade (see Table 2). As shown in Figure 2, however, this difference reversed itself by the end of eighth grade given that American children's motivation in school to please their parents decreased over time, whereas that of Chinese children increased (see Table 2). Indeed, the model constraining the slope to be equal between the United States and China, $\chi^2 (N = 825) = 80.10$, CFI = .94, TLI = .87, RMSEA = .07, fit worse than the baseline model, $\Delta\chi^2 = 31.91$, $p < .001$. In both countries, there was substantial variability in children's motivation in school to please their parents at the beginning of seventh grade and its change over time (see Table 2). As was the case for children's feelings of obligation to their parents, girls and boys did not differ in their motivation in school to please their parents during the fall of seventh grade ($\beta s = -.06$ in the United States and China, *ns*), but girls maintained such motivation over the seventh and eighth grades to a greater extent than did boys in both the United States ($\beta = .16$, $p < .001$) and China ($\beta = .20$, $p < .001$), $\Delta\chi^2 s < 3.50$, *ns*.

Links between the two forms—As shown in Table 1, consistent with expectations, the two forms of children's sense of responsibility to their parents were associated at each wave ($r s = .21$ to $.49$ in the United States and $.34$ to $.45$ in China, $p s < .001$). To examine the extent to which the two changed in tandem we included the intercepts and slopes of each in a series of two-group SEM correlated growth curve analyses. In the baseline (unconstrained) model, the paths between all of the growth parameters of each form were allowed to freely correlate, as were the errors of the indicators of each of the two forms at each wave, $\chi^2 (N = 825) = 117.27$, CFI = .97, TLI = .93, RMSEA = .05. Country differences in the relations between children's feelings of obligation to their parents and motivation in school to please them were examined by separately forcing the correlations between the parallel growth parameters (e.g., the slopes) of the two to be equal between the United States and China in constrained models, $\chi^2 s (N = 825) < 118$, CFIs $> .96$, TLIs $> .93$, RMSEAs $< .06$, which were then compared to the baseline model. The sizeable positive association between the two forms of children's sense of responsibility during the fall of seventh grade was similar in the United States ($\beta = .40$, $p < .001$) and China ($\beta = .48$, $p < .001$), $\Delta\chi^2 < 1$. In addition, the more children's feelings of obligation to their parents declined over the seventh and eighth

grades, the more their motivation in school to please their parents declined (β s = .40 in the United States and .64 in China, p s < .001), in both countries, $\Delta\chi^2 = 1.24$, *ns*.

Implications for Academic Functioning

To investigate the effects of children's sense of responsibility to their parents on their academic functioning over time in the United States and China, a series of two-group SEMs were tested. Children's academic functioning in the spring of eighth grade was predicted simultaneously from their sense of responsibility to their parents in the fall of seventh grade (intercept effect) and its trajectory over the seventh and eighth grades (slope effect), adjusting for children's academic functioning in the fall of seventh grade. The effects of each form of children's sense of responsibility to their parents on each form of their academic functioning were examined separately. Each set of models included a baseline model and several constrained models. In the baseline models, drawing from the measurement equivalence analyses, the factor loadings and intercepts of the indicators for children's academic functioning, with the exception of children's grades which was not a latent construct, were constrained to be equal across waves and countries, χ^2 s ($N = 825$) < 100, CFIs > .97, TLIs > .94, RMSEAs < .05. In the constrained models, the effects of the intercept and slope of children's sense of responsibility to their parents on their academic functioning were forced one by one to be equal between the United States and China, χ^2 s ($N = 825$) < 99, CFIs > .97, TLIs > .94, RMSEAs < .05.

As shown in Table 1, the two forms of children's sense of responsibility to their parents were associated with the quality of their relationships with their parents at each wave in both the United States and China, with the associations being stronger for children's feelings of obligation (r s = .53 to .62 in the United States and .42 to .49 in China, p s < .001) than for children's motivation in school to please their parents (r s = .04 to .22 in the United States and .14 to .26 in China, p s < .001), t s > 5.15, p s < .001, in both countries. Given such associations, as well as prior research implicating the quality of children's relationships with their parents in their academic functioning, we conducted additional analyses including the intercept and slope of the quality of children's relationships with their parents in the models predicting their academic functioning from each form of their sense of responsibility to their parents. Children's academic functioning was predicted from the growth parameters of both children's sense of responsibility to their parents and the quality of their relationships with them, with the correlations between the intercepts and slopes of the two dimensions of children's connectedness to their parents being included in the model, χ^2 s ($N = 825$) < 430, CFIs > .93, TLIs > .90, RMSEAs < .07.

Feelings of obligation to parents—As shown in Table 3, the more children felt obligated to their parents in the fall of seventh grade (intercept effect) and the less such feelings declined over time (slope effect), the more they valued school, used self-regulated learning strategies, and were mastery oriented in the spring of eighth grade, similarly in the United States and China, $\Delta\chi^2$ s < 3.08, *ns*. Although children's feelings of obligation to their parents in the fall of seventh grade were not predictive of their grades in the spring of eighth grade, the trajectory over time of their feelings was predictive, such that the less children's feelings of obligation to their parents decreased, the better children's grades, with this pattern similarly evident in the two countries, $\Delta\chi^2 < 1$. When the intercept and slope of the quality of children's relationships with their parents were included in the models as predictors of children's academic functioning, children's feelings of obligation to their parents continued to predict the value children placed on school and their self-regulated learning strategies, but not their mastery orientation and grades, with similar effects in the United States and China, $\Delta\chi^2$ s < 2.89, *ns*.

Motivation in school to please parents—The more children were motivated in school to please their parents in the fall of seventh grade and the less such motivation declined over time, the more they valued school, used self-regulated learning strategies, and were mastery oriented during the spring of eighth grade; the better their grades as well (see Table 4). These effects were similar in the United States and China, $\Delta\chi^2s < 2.27$, *ns*. Notably, all of the effects remained when the intercepts and slopes of the quality of children's relationship with their parents were added to the models as predictors of children's academic functioning, with no differences in the effects between the United States and China, $\Delta\chi^2s < 1.13$, *ns*.

Unique effects of the two forms—In a final set of analyses, we included the intercepts and slopes of the two forms of children's sense of responsibility in a single model as simultaneous, correlated predictors of children's academic functioning to identify the extent to which the effects of each were overlapping (see description of models including relationship quality). As shown in Table 3, the effects of children's feelings of obligation to their parents were substantially reduced once children's motivation in school to please their parents was included in the model. The effects on the value children placed on school and their use of self-regulated learning strategies generally remained evident, but were smaller in size, with no differences in the United States and China, $\Delta\chi^2s < 1.86$, *ns*. The effects on children's mastery orientation and grades were no longer evident in either country, $\Delta\chi^2s < 2.66$, *ns*. With the exception of the slope effect on children's grades, the effects of American and Chinese children's motivation in school to please their parents on their academic functioning remained quite similar to those yielded from the analyses not taking into account children's feelings of obligation to their parents, with no differences between the two countries, $\Delta\chi^2s < 3.37$, *ns*.

Discussion

The goal of the current research was to provide insight into children's sense of responsibility to their parents (i.e., children's feelings of obligation to their parents and motivation in school to please them) as children enter adolescence in the United States and China – two countries that are likely to differ in their conceptions of adolescence. We found that American, but not Chinese, children's sense of responsibility to their parents declined over the seventh and eighth grades. Notably, there was also substantial variance within each country in the extent to which children adhered to these different trajectories suggesting that children differed their conformity to cultural conceptions of adolescence. This variance matter for children's academic functioning: Both children's feelings of obligation to their parents and motivation in school to please them were predictive of their enhanced academic functioning over time similarly in the United States and China. Thus, the path traveled by children during the early adolescent years in terms of their sense of responsibility to their parents is not a uniform one in the two countries, but there is uniformity in its role in children's academic functioning.

Trajectories over Early Adolescence

Upon entering seventh grade in a new school, American children were no less likely to harbor a sense of responsibility to their parents than were their Chinese counterparts. However, consistent with the idea that conceptions of adolescence differ in the United States and China, as children in the two countries began to move through this phase of development, their trajectories diverged. In line with Western depictions of adolescence as a time when children seek to establish their independence from their parents (for a review, see Collins & Steinberg, 2006), American children's feelings of obligation to their parents and motivation in school to please them decreased as they moved through the early adolescent years. In contrast, in China, where much import is placed on filial piety (Ho, 1996; Wang &

Hsueh, 2000), this was not the case: Chinese children maintained their feelings of obligation to their parents and increased their motivation in school to please their parents during this time. Given the differential trajectories in the two countries, by the end of eighth grade, American children harbored less of a sense of responsibility to their parents than did Chinese children, $t_s > 2.60$, $p_s < .01$. Taken with prior research on other dimensions of children's connectedness to their parents in early adolescence in the United States and China (Pomerantz, et al., 2009; Yau & Smetana, 1996), these findings suggest that the American tendency for children's connectedness to their parents to decline during this phase of development is not universal.

Differences among girls and boys in how their sense of responsibility to their parents changed over the early adolescent years, however, were similar in the United States and China. In both countries, although girls did not begin adolescence with a greater sense of responsibility to their parents than did boys, they were more likely to maintain this dimension of connectedness to their parents over time – in terms of both their feelings of obligation to their parents and motivation in school to please them. It is possible that conceptions in both countries about girls' (versus boys') greater connection to the family may lead girls to maintain their sense of responsibility to their parents over early adolescence more (for a similar point in regards to girls' tendency to maintain over early adolescence definitions of themselves that include their relationships with their parents to a greater extent than do boys, see Pomerantz, et al., 2009).

Implications for Academic Functioning

Despite the differences in the United States and China in children's sense of responsibility to their parents as they moved through early adolescence, there was substantial variance in each country in this dimension of children's connectedness to their parents. This variance was predictive of children's academic functioning over time in both countries. The more children felt obligated to their parents as they began seventh grade in a new school and the more they were able to maintain their feelings of obligation over the seventh and eighth grades, the better their academic functioning at the end of eighth grade in terms of the value they placed on school and their use of self-regulated learning strategies. Children's motivation in school to please their parents predicted their academic functioning more broadly: Children harboring such motivation at the beginning of seventh grade and maintaining it as they progressed to the end of eighth grade had enhanced academic functioning in terms of not only the value they placed on school, their use of self-regulated learning strategies, and their orientation to mastery, but also their grades at the end of eighth grade. Children's sense of responsibility to their parents predicted enhanced academic functioning among children similarly in the United States and China. Thus, it appears that the normativeness of the decline in this dimension of children's connectedness to their parents in the United States did little to buffer its effect – most likely because American children are in need of the motivation in the academic context that their sense of responsibility to their parents provides during the early adolescent years.

The effects of children's sense of responsibility to their parents on their academic functioning are consistent with Fuligni and Flook's (2005) argument that children's feelings of family obligation may allow them to stay on track in school by orienting them toward their parents' values as well as providing them with purpose in this context. At first blush, the motivating role of children's sense of responsibility to their parents may be surprising given that children's feelings of obligation to their parents and motivation in school to please them may represent external motivators, which often undermine children's academic functioning (for a review, see Deci, et al., 1999). However, the motivating role of children's sense of responsibility to their parents during early adolescence is consistent with prior theory and research. For one, external motivators, such as rewards, are useful when

individuals are not already internally motivated (for a review, see Deci, et al., 1999), as is often the case for children in the academic context during early adolescence (for a review, see Wigfield, et al., 2006). External motivation may get children engaged, even if only superficially, when they lack intrinsic motivation (Vansteenkiste, et al., 2005). It may also be the case that children's sense of responsibility to their parents is a unique form of motivation given that it is often accompanied by positive relationships between children and parents. Such relationships may lead children to develop a sense of responsibility to their parents for internal reasons, such as a desire to reciprocate their parents' support, which may cause the motivation that grows out of their sense of responsibility to their parents to be internalized – at least in part.

Consistent with this idea, when we examined the associations between children's sense of responsibility to their parents and their internal and external reasons for doing their schoolwork, we found that children's sense of responsibility to their parents was associated with both types of reasons. In the case of children's feelings of obligation to their parents, the associations were generally similar for children's internal ($r_s = .35$ to $.39$ in the United States and $.29$ to $.36$ in China, $p_s < .001$) and external ($r_s = .23$ to $.38$ in the United States and $.17$ to $.23$ in China, $p_s < .001$) reasons. As we indicate in another report from this project (Cheung & Pomerantz, 2010), in the case of children's motivation in school to please their parents, the associations with children's internal reasons were similar in size to those for children's feelings of obligation to their parents, but the associations with children's external reasons were significantly larger – almost twice the size. Given such a pattern, it is possible that in the long term children's motivation in school to please their parents could backfire when children come to feel that their parents are no longer invested in their doing well.

In predicting children's academic functioning from their earlier sense of responsibility to their parents as well as change over time in this dimension of children's connectedness to their parents, we adjusted for children's earlier academic functioning. This ensured that the effects we observed were not simply due to the earlier concurrent association between children's sense of responsibility to their parents and their academic functioning. Although this provides a window into the direction of effects of children's sense of responsibility to their parents in the fall of seventh grade on their subsequent academic functioning, it does not do so for the effect of change in this dimension of children's connectedness to their parents over the seventh and eighth grades. Indeed, it is plausible that this latter effect represents the tendency for improvements over time in children's academic functioning to lead children to harbor a greater sense of responsibility to their parents as children become more capable of fulfilling such a responsibility. Moreover, the influence of third variables cannot be ruled out entirely. We addressed this issue in part by adjusting for the quality of children's relationships with their parents, which were not only associated with children's sense of responsibility to their parents in the current research, but have also been identified as precursors to children's academic functioning (e.g., Furrer & Skinner, 2003; Jacobsen & Hofman, 1997).

Similarities and Differences in the Two Forms

We examined two forms of children's sense of responsibility to their parents: Children's feelings of obligation to them and motivation in school to please them. In both the United States and China, the two were not only substantially associated, but also showed similar patterns of change over time, with change in one being tied to change in the other. Moreover, both children's feelings of obligation to their parents and their motivation in school to please them were associated with more positive relationships between children and parents. Both forms also predict children's academic functioning. Despite these similarities, children's feelings of obligation to their parents and motivation in school to please them are not the same. Indeed, consistent with the notion that not all children may seek to fulfill their

obligations to their parents academically (Hardway & Fuligni, 2006), in both countries the associations between the two forms of children's sense of responsibility to their parents, although sizeable, were not so large as to indicate that the two are completely overlapping.

The two forms differed along several lines. First, although both were associated with the quality of children's relationships with their parents, children's feelings of obligation to their parents were consistently more strongly associated than was children's motivation in school to please their parents. It may be that children's feelings of obligation represent a more reciprocated form of their sense of responsibility to their parents which develops from children being involved in relationships of reciprocity with their parents. In contrast, children's motivation in school to please their parents may represent a more hierarchical form in which children are fulfilling their parents' demands in a more authoritarian context, as suggested by the heightened association of this form with children's external reasons for doing their schoolwork. Thus, feeling obligated to parents may be a more positive experience for children than is being motivated in school to please parents. Second, the two forms of children's sense of responsibility to their parents were both predictive of children's academic functioning, but the latter was more predictive. Indeed, the effects of children's feelings of obligation to their parents were due in part, often entirely, to their motivation in school to please their parents. Thus, it appears that children's feelings of obligation to their parents in large part contribute to their academic functioning to the extent that such feelings translate into motivation in school to please their parents.

Limitations and Future Directions

The current research has several limitations that point to important directions for future research. For one, the samples used in the current research do not represent the diversity of the United States or China. Thus, questions remain concerning within-country variations in children's sense of responsibility to their parents. Given that children of different ethnic heritage in the United States differ in their feelings of obligation to their family during late adolescence (e.g., Fuligni, et al., 1999), it is possible that their sense of responsibility to their parents changes differently during early adolescence. However, although the unique cultural heritage of children residing in the United States may be of import, the American cultural context in which children reside may also shape them given that American values are extensively spread through public representations (Sperber, 1996) such as those found on television and in schools (Heyman, Fu, & Lee, 2008). Indeed, examining the trajectories of feelings of family obligation during the transition to adulthood, Fuligni and Pedersen (2002) found quite similar changes across Americans of European, Chinese, and other ethnic backgrounds.

In addition, differences between urban and rural children in China in their sense of obligation to their family during late adolescence (Fuligni & Zhang, 2004) suggests that children's sense of responsibility to their parents in the two areas may not be identical during early adolescence. For example, urban areas, such as Beijing, have been exposed to greater Westernization than have rural areas; consequently, in urban areas, children's sense of responsibility to their parents may develop more similarly to that of their American counterparts showing less of an increase over time than that of children in rural areas. Beyond issues of ethnicity and geography, the samples' representativeness of the larger populations from which they were drawn is unclear, particularly in light of the fact that only slightly over half of parents gave permission for their children to participate. Moreover, of these children, those not missing any data were somewhat better adjusted at the first wave of the project than were those missing some data.

It is also the case that a limited slice of development was examined in the current research. We chose to focus on the early adolescent years given that this is a time when children's

connectedness to their parents begins to change – at least in the United States (for a review, see Collins & Steinberg, 2006). However, it is unclear how the changes identified in children's sense of responsibility to their parents in the United States and China fit into the larger picture of the development of children's connectedness to their parents. We have assumed that the different trajectories of American and Chinese children's sense of responsibility to their parents are due to culturally based conceptions of adolescence in the two countries. However, the decline in the United States may be part of an ongoing decline that began before children entered adolescence. In addition, the question of whether the distinct trajectories we identified in the two countries continue into later adolescence and adulthood remains. Given that Americans' feelings of obligation to their family increase as they make the transition to adulthood (Fuligni & Pederson, 2002), the decrease we observed in the United States must reverse itself at some point.

Also of import is whether Chinese children's sense of responsibility to their parents begins to decline in the later adolescent years, reflecting a later emphasis on children establishing independence from their parents. Alternatively, such a decline may never occur, with individuation taking place along other dimensions. Chinese children's individuation may manifest itself not in movement away from their parents as reflected in part in children's dampened sense of responsibility to their parents, but rather in the development of independent attributes, such as greater self-sufficiency, which do not detract from and may even contribute to filial piety by allowing children to fulfill their responsibilities to their parents.

Conclusions

Despite such limitations, the current research contributes to a growing body of research indicating that the early adolescent years may be qualitatively different in the United States and China in terms of children's connectedness to their parents. We found that children in the United States decrease their sense of responsibility to their parents as they move into adolescence, whereas children in China maintain or even increase it during this phase of development. These trajectories suggest that in China early adolescence may not be a time when children turn away from their parents to focus on their own lives as often appears to be the case in the United States. In fact, part of the maturation process for Chinese children may be to support their parents. In both countries, children varied in the extent to which their sense of responsibility adhered to the normative trajectory. This variability appeared to matter for children's academic functioning: In the United States and China, children's sense of responsibility to their parents was predictive over time of enhanced academic functioning among children – a finding that suggests that efforts aimed at maintaining children's sense of responsibility to their parents during early adolescence in the United States may be useful in enhancing their investment, engagement, and ultimately performance in school.

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References

- Arbuckle, J.L. Full information estimation in the presence of incomplete data. In: Marcoulides, G.A.; Schumacker, R.E., editors. *Advanced structural equation modeling: Issues and techniques*. Mahwah, NJ: Lawrence Erlbaum; 1996. p. 243-277.
- Arbuckle, J.L. *AMOS 7.0 User's Guide*. Chicago: SPSS; 2006.

- Armsden GC, Greenberg MT. The inventory of parent and peer attachment: Individual differences and the relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*. 1987; 16:427–454.
- Brislin, RW. Translation and content analysis of oral and written materials. In: Triandis, HC.; Berry, JW., editors. *Handbook of Cross-Cultural Psychology: Vol 2, Methodology*. Boston: Allyn and Bacon; 1980. p. 389-444.
- Buchanan CM, Holmbeck GN. Measuring beliefs about adolescent personality and behavior. *Journal of Youth and Adolescence*. 1998; 27:607–627.
- Buhrmester D, Furman W. The development of companionship and intimacy. *Child Development*. 1987; 58:1101–1113. [PubMed: 3608659]
- Chao, RK.; Tseng, V. Parenting of Asians. In: Bornstein, MH., editor. *Handbook of parenting: Vol 4: Social conditions and applied parenting*. 2nd. Mahwah, NJ: Erlbaum; 2002. p. 59-93.
- Cheung CS, Pomerantz EM. Why does parents' involvement enhance children's achievement? The role of parent-oriented motivation. 2010 Unpublished manuscript.
- Collins, WA.; Steinberg, L. Adolescent development in interpersonal context. In: Eisenberg, N., editor. *Handbook of child psychology: Vol 3, Social, emotional, and personality development*. 6th. Hoboken, NJ: 2006. p. 1003-1067.
- Deci EL, Koestner R, Ryan RM. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*. 1999; 125:627–668. [PubMed: 10589297]
- Dowson M, McInerney DM. The development and validation of the goal orientation and learning strategies survey (GOALS-S). *Educational and Psychological Measurement*. 2004; 64:290–310.
- Eccles JS, Midgley C, Wigfield A, Buchanan CM, Reuman D, Flanagan C, et al. Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist*. 1993; 48:90–101. [PubMed: 8442578]
- Fuligni, AJ.; Flook, L. A social identity approach to ethnic differences in family relationships. In: Kail, R., editor. *Advances in child development and behavior*. Vol. 33. New York: Academic Press; 2005. p. 61-75.
- Fuligni AJ, Pederson S. Family obligation and the transition to young adulthood. *Developmental Psychology*. 2002; 38:856–868. [PubMed: 12220060]
- Fuligni AJ, Tseng V, Lam M. Attitudes toward family obligation among American adolescents with Asian, Latin American, and European American backgrounds. *Child Development*. 1999; 70:1030–1044.
- Fuligni AJ, Yip T, Tseng V. The impact of family obligation on the daily activities and psychological well-being of Chinese American adolescents. *Child Development*. 2002; 73:302–314. [PubMed: 14717259]
- Fuligni AJ, Zhang W. Attitudes toward family obligation among adolescents in contemporary urban and rural China. *Child Development*. 2004; 75:180–192. [PubMed: 15015683]
- Furman W, Buhrmester D. Age and sex differences in perceptions of networks of personal relationships. *Child Development*. 1992; 63:103–115. [PubMed: 1551320]
- Furrer C, Skinner E. Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*. 2003; 95:148–162.
- Hardway C, Fuligni AJ. Dimensions of family connectedness among adolescents with Mexican, Chinese, and European backgrounds. *Developmental Psychology*. 2006; 42:1246–1258. [PubMed: 17087556]
- Heyman GD, Fu G, Lee K. Reasoning about the disclosure of success and failure to friends among children in the United States and China. *Developmental Psychology*. 2008; 44:908–918. [PubMed: 18605823]
- Ho, DYF. Cognitive socialization in Confucian heritage culture. In: Greenfield, PM.; Cocking, RR., editors. *Cross-cultural roots of minority child development*. Mahwah, NJ: Lawrence Erlbaum; 1994. p. 285-313.
- Ho, DYF. Filial piety and its psychological consequences. In: Bond, MH., editor. *Handbook of Chinese psychology*. New York: Oxford University Press; 1996. p. 155-165.

- Jacobsen T, Hofman V. Children's attachment representations: Longitudinal relations to school behavior and academic competency in middle childhood and adolescence. *Developmental Psychology*. 1997; 33:703–710. [PubMed: 9232385]
- Kline, RB. Principles and practice of structural equation modeling. 2nd. New York: Guilford Press; 2005.
- Larson RW, Richards MH, Moneta G, Holmbeck G, Duckett E. Changes in adolescents' daily interactions with their families from ages 10 to 18: Disengagement and transformation. *Developmental Psychology*. 1996; 32:744–754.
- Laursen B, Coy KC, Collins WA. Reconsidering changes in parent-child conflict across adolescence: A meta-analysis. *Child Development*. 1998; 69:817–832. [PubMed: 9680687]
- Little TD. Mean and covariance structures (MACS) analyses of cross-cultural data: Practical and theoretical issues. *Multivariate Behavioral Research*. 1997; 32:53–76.
- Little TD, Cunningham WA, Shahar G, Widaman KF. To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling*. 2002; 9:151–173.
- McDonald RP, Ho MHR. Principles and practice in reporting structural equation analyses. *Psychological Methods*. 2002; 7:64–82. [PubMed: 11928891]
- Nelson LJ, Chen X. Emerging adulthood in China: The role of social and cultural factors. *Child Development Perspectives*. 2007; 1:86–91.
- Ng SH, Loong CSF, Liu JH, Weatherall A. Will the young support the old? An individual- and family-level study of filial obligations in two New Zealand cultures. *Asian Journal of Social Psychology*. 2000; 3:163–182.
- Pomerantz EM, Qin L, Wang Q, Chen H. American and Chinese early adolescents' inclusion of their relationships with their parents in their self-construals. *Child Development*. 2009; 80:792–807. [PubMed: 19489904]
- Pomerantz EM, Saxon JL, Oishi S. The psychological tradeoffs of goal investment. *Journal of Personality and Social Psychology*. 2000; 79:617–630. [PubMed: 11045742]
- Qin L, Pomerantz EM, Wang Q. Are gains in decision-making autonomy during early adolescence beneficial for emotional functioning? The case of the United States and China. *Child Development*. 2009; 80:1705–1721. [PubMed: 19930347]
- Sperber, D. Explaining culture: A naturalistic approach. Oxford: Blackwell; 1996.
- Steenkamp JBEM, Baumgartner H. Assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research*. 1998; 25:78–90.
- Vansteenkiste M, Simons J, Lens W, Soenens B, Matos L. Examining the motivational impact of intrinsic versus extrinsic goal framing and autonomy-supportive versus internally controlling communication style on early adolescents' academic achievement. *Child Development*. 2005; 76:483–501. [PubMed: 15784095]
- Wang, Q.; Hsueh, Y. Parent-child interdependence in Chinese families: Change and continuity. In: Violato, C.; Oddone-Paolucci, E.; Genuis, M., editors. *The changing family and child development*. Aldershot, England: Ashgate Publishing; 2000. p. 60-69.
- Wang Q, Pomerantz EM. The motivational landscape of early adolescence in the US and China: A longitudinal investigation. *Child Development*. 2009; 80:1280–1296.
- Wigfield, A.; Eccles, JS.; Schiefele, U.; Roeser, RW.; Davis-Kean, P. Development of achievement motivation. In: Eisenberg, N., editor. *Handbook of child psychology: Vol 3, Social, emotional, and personality development*. 6th. Hoboken, NJ: Wiley; 2006. p. 933-1002.
- Wigfield, A.; Wagner, AL. Competence, motivation and identity development during adolescence. In: Elliot, AJ.; Dweck, CS., editors. *Handbook of Competence and Motivation*. New York: Guilford Publications; 2005. p. 222-239.
- Wothke, W. Longitudinal and multi-group modeling with missing data. In: Little, TD.; Schnabel, KU.; Baumert, J., editors. *Modeling longitudinal and multiple group data: Practical issues, applied approaches and specific examples*. Mahwah, NJ: Erlbaum; 2000. p. 269-281.
- Yau J, Smetana JG. Adolescent-parent conflict among Chinese adolescents in Hong-Kong. *Child Development*. 1996; 67:1262–1275.
- Yu, AB. Ultimate life concerns, self, and Chinese achievement motivation. In: Bond, MH., editor. *The handbook of Chinese psychology*. Hong Kong: Oxford University Press; 1996. p. 227-246.

Figure 1. Slopes over the seventh and eighth grades of American and Chinese children's feelings of obligation to their parents.

Figure 2. Slopes over the seventh and eighth grades of American and Chinese children's motivation in school to please their parents.

Table 1
Associations between Sense of Responsibility to Parents and Quality of Relationships with Parents

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Wave 1												
1. Feelings of obligation to parents	---	.34	.49	.50	.32	.39	.48	.30	.33	.34	.15	.35
2. Motivation in school to please parents	.21	---	.14	.21	.57	.15	.22	.51	.08	.19	.40	.10
3. Parent-child relationship quality	.62	.04	---	.35	.18	.70	.32	.21	.65	.30	.15	.63
Wave 2												
4. Feelings of obligation to parents	.64	.21	.45	---	.43	.45	.54	.39	.41	.44	.29	.35
5. Motivation in school to please parents	.30	.52	.18	.40	---	.25	.27	.58	.19	.26	.44	.19
6. Parent-child relationship quality	.53	.07	.77	.53	.22	---	.32	.24	.72	.37	.23	.67
Wave 3												
7. Feelings of obligation to parents	.51	.13	.43	.57	.40	.48	---	.45	.42	.52	.31	.36
8. Motivation in school to please parents	.24	.41	.09	.26	.63	.13	.46	---	.24	.29	.55	.21
9. Parent-child relationship quality	.44	.05	.69	.43	.19	.69	.59	.20	---	.38	.23	.76
Wave 4												
10. Feelings of obligation to parents	.41	.10	.35	.41	.30	.37	.63	.33	.44	---	.40	.44
11. Motivation in school to please parents	.17	.34	.09	.19	.54	.08	.33	.63	.13	.49	---	.26
12. Parent-child relationship quality	.35	.08	.57	.34	.13	.64	.46	.14	.73	.56	.19	---

Note. Correlations for the United States are below the diagonal with correlations greater than .10 significant ($p < .05$); correlations for China are above the diagonal with correlations greater than .09 significant ($p < .05$).

Table 2
Over-Time Trajectories of Sense of Responsibility to Parents

	United States	China
Growth parameters	Estimate (SE)	Estimate (SE)
Feelings of obligation to parents		
Intercept		
Mean	4.33 *** (.02)	4.33 *** (.02)
Variance	.28 *** (.03)	.19 *** (.02)
Slope		
Mean	-.07 *** (.01)	.02 (.01)
Variance	.04 *** (.01)	.02 *** (.00)
Motivation in school to please parents		
Intercept		
Mean	3.67 *** (.05)	3.46 *** (.04)
Variance	.52 *** (.06)	.50 *** (.05)
Slope		
Mean	-.11 *** (.02)	.04* (.02)
Variance	.06 *** (.01)	.04 *** (.01)

Note. For children's feelings of obligation to their parents, the final estimates for the growth parameters (i.e., intercepts and slopes) are based on a model constraining the mean of the intercept, but not the slope, across countries given that there was no difference between countries in the mean of the intercept, but there was a difference ($p < .01$) in the mean of the slope. For children's motivation in school to please their parents, the final estimates for the growth parameters are based on the unconstrained model given a difference ($ps < .01$) between countries in the mean of both the intercept and slope.

*
 $p < .05$.

 $p < .001$.

Table 3
Effects of Feelings of Obligation to Parents on Academic Functioning over Time

Academic functioning	United States						China					
	Intercept effect			Slope effect			Intercept effect			Slope effect		
	Std.	Unstd.(SE)	Std.	Unstd.(SE)	Std.	Unstd.(SE)	Unstd.(SE)	Std.	Unstd.(SE)	Std.	Unstd.(SE)	Unstd.(SE)
Covariate: None												
Value	.23***	.43 (.08)	.41***	.244 (.35)	.31***	.43 (.08)		.29***			2.44 (.35)	
Self-regulated learning strategies	.27***	.46 (.08)	.38***	1.70 (.24)	.25***	.46 (.08)		.28***			1.70 (.24)	
Mastery orientation	.18***	.45 (.12)	.30***	2.03 (.36)	.19***	.45 (.12)		.26***			2.03 (.36)	
Grades	.04	.07 (.04)	.11**	.48 (.16)	.03	.07 (.04)		.07**			.48 (.16)	
Covariate: Relationship quality												
Value	.28***	.69 (.14)	.33***	2.16 (.66)	.26***	.69 (.14)		.25***			2.16 (.66)	
Self-regulated learning strategies	.23***	.36 (.09)	.21*	.92 (.41)	.22***	.36 (.09)		.16*			.92 (.41)	
Mastery orientation	.01	.03 (.18)	.01	.07 (.90)	.01	.03 (.18)		.01			.07 (.90)	
Grades	-.01	-.02 (.07)	.04	.17 (.31)	-.01	-.02 (.07)		.02			.17 (.31)	
Covariate: Motivation in school to please parents												
Value	.26***	.61 (.12)	.19*	.12 (.47)	.22***	.61 (.12)		.13*			.12 (.47)	
Self-regulated learning strategies	.15**	.25 (.08)	.03	.11 (.38)	.14**	.25 (.08)		.02			.11 (.38)	
Mastery orientation	.07	.17 (.13)	.06	.36 (.48)	.07	.17 (.13)		.05			.36 (.48)	
Grades	.00	.00 (.05)	.06	.28 (.21)	.00	.00 (.05)		.04			.28 (.21)	

Note. Std. = Standardized estimate; Unstd. = Unstandardized estimate. Because there was no difference between the United States and China in the intercept and slope effects, estimates are from the models constraining these effects to be equal.

*
p < .05.

**
p < .01.

p < .001.

Table 4
Effects of Motivation in School to Please Parents on Academic Functioning over Time

Academic functioning	United States						China					
	Intercept effect			Slope effect			Intercept effect			Slope effect		
	Std.	Unstd.(SE)	Std.	Unstd.(SE)	Std.	Unstd.(SE)	Unstd.(SE)	Std.	Unstd.(SE)	Std.	Unstd.(SE)	Unstd.(SE)
Covariate: None												
Value	.23***	.43 (.08)	.41***	2.44 (.35)	.25***	.43 (.08)	.43***	.43***	.43***	.43***	2.44 (.35)	.43***
Self-regulated learning strategies	.23***	.30 (.05)	.53***	2.10 (.25)	.27***	.30 (.05)	.30***	.55***	.30***	.55***	2.10 (.25)	.30***
Mastery orientation	.15***	.30 (.08)	.41***	2.35 (.36)	.19***	.30 (.08)	.43***	.43***	.30***	.43***	2.35 (.36)	.43***
Grades	.09***	.11 (.03)	.12**	.42 (.13)	.08***	.11 (.03)	.09**	.09**	.11 (.03)	.09**	.42 (.13)	.09**
Covariate: Relationship quality												
Value	.19***	.37 (.08)	.37***	2.21 (.38)	.22***	.37 (.08)	.38***	.38***	.37 (.08)	.38***	2.21 (.38)	.38***
Self-regulated learning strategies	.21***	.27 (.05)	.48***	1.77 (.24)	.25***	.27 (.05)	.48***	.48***	.27 (.05)	.48***	1.77 (.24)	.48***
Mastery orientation	.10**	.23 (.08)	.33***	2.08 (.42)	.13**	.23 (.08)	.31***	.31***	.23 (.08)	.31***	2.08 (.42)	.31***
Grades	.07**	.09 (.03)	.09*	.32 (.15)	.07**	.09 (.03)	.06*	.06*	.09 (.03)	.06*	.32 (.15)	.06*
Covariate: Motivation in school to please parents												
Value	.13**	.25 (.08)	.32***	1.93 (.45)	.15**	.25 (.08)	.34***	.34***	.25 (.08)	.34***	1.93 (.45)	.34***
Self-regulated learning strategies	.20***	.24 (.05)	.53***	2.02 (.35)	.23***	.24 (.05)	.57***	.57***	.24 (.05)	.57***	2.02 (.35)	.57***
Mastery orientation	.13**	.23 (.08)	.36***	1.94 (.43)	.16**	.23 (.08)	.39***	.39***	.23 (.08)	.39***	1.94 (.43)	.39***
Grades	.08**	.10 (.04)	.08	.29 (.18)	.07**	.10 (.04)	.06	.06	.10 (.04)	.06	.29 (.18)	.06

Note. Std. = Standardized estimate; Unstd. = Unstandardized estimate. Because there was no difference between the United States and China in the intercept and slope effects, estimates are from the models constraining these effects to be equal.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.