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Does Adolescents' Disclosure to their Parents Matter for their Academic Adjustment?

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Abstract

The role of adolescents' disclosure to their parents in their academic adjustment was examined in a study of 825 American and Chinese adolescents (mean age = 12.73 years). Four times over the seventh and eighth grades, adolescents reported on their spontaneous disclosure of everyday activities to their parents, the quality of their relationships with their parents, and their parents' autonomy support and control. Information about multiple dimensions of adolescents' academic adjustment (e.g., learning strategies, autonomous vs. controlled motivation, and grades) was also obtained. Both American and Chinese adolescents' disclosure predicted their enhanced academic adjustment over time. However, when American adolescents disclosed in a negative context (e.g., a poor parent-child relationship or controlling parenting), their autonomous (vs. controlled) motivation was undermined.

Keywords

Achievement; disclosure; motivation; parent-child relationships; parenting

There has been increasing theoretical and empirical attention over the last decade to adolescents' spontaneous disclosure of their everyday activities (i.e., their voluntary sharing of information about their daily lives) to their parents (for reviews, see Kerr & Stattin, 2003; Smetana, 2010). The attention is not unwarranted given that such disclosure consistently predicts reduced deviant behavior, such as aggression and delinquency, among adolescents over and above parents' monitoring of their behavior (e.g., Keijsers, Frijns, Branje, & Meeus, 2009; Stattin & Kerr, 2000). Moreover, the effect remains when adolescents' earlier deviant behavior is taken into account (e.g., Kerr, Stattin, & Burk, 2010). Because deviant behavior is particularly high among youth during adolescence (for a review, see Dodge, Coie, & Lynam, 2006), the role of their disclosure to their parents in inhibiting such behavior is significant.

Adolescents are also at risk academically: As they move into adolescence, their interest and engagement as well as achievement in school often declines (e.g., Fredricks & Eccles, 2002; Kenney-Benson, Pomerantz, Ryan, & Patrick, 2006). Youth's disclosure to their parents has the potential to protect them from such a risk. It has been linked to enhanced academic

adjustment among adolescents (Kerr & Stattin, 2000; Roth, Ron, & Benita, 2009). However, although the association between adolescents' disclosure and their academic adjustment is evident over and above a variety of parenting practices (e.g., monitoring, autonomy support, and love withdrawal), the direction of influence represented by the association is unclear given that the research to date has been concurrent. The present research addresses this gap by investigating the effects of youth's disclosure on their academic adjustment *over time*. It further extends prior research by elucidating the role of the *context* (e.g., parents' autonomy support) in which youth's disclosure takes place. The cultural specificity of these processes was examined as well by studying both American and Chinese youth as they enter adolescence.

The Role of Disclosure in Academic Adjustment

Adolescents' spontaneous disclosure of their everyday activities to their parents is considered an important source of parents' knowledge (e.g., Stattin & Kerr, 2000; Yau, Tasopolous-Chan, & Smetana, 2009). The entry into adolescence is often characterized by youth spending less time with their parents (e.g., Csikszentmihalyi & Larson, 1984; Hardway & Fuligni, 2006). Thus, youth's disclosure to their parents during this phase of development may be a critical window into their lives not available to parents through other avenues. As such, the knowledge gained by parents from their adolescents' disclosure has been argued to inhibit deviant behavior among adolescents as it allows parents to steer them away from situations providing opportunities for delinquency as well as other risky endeavors (e.g., Soenens et al., 2006; Stattin & Kerr, 2000).

The knowledge yielded by adolescents' disclosure to their parents may be useful to parents in promoting their academic adjustment as well. When youth share the difficulties they are having in school, parents may address them through a variety of practices, which they may not have implemented without the knowledge yielded by such disclosure. For example, when adolescents let their parents know they are having trouble with math, parents may provide assistance with homework in this area, seek outside resources (e.g., workbooks or tutoring) to support learning in math, or speak with the math teacher. The knowledge parents gain about aspects of youth's lives unrelated to school may also be useful. When, for instance, adolescents divulge how they spend their free time, parents may use the opportunity to direct them toward activities conferring academic benefits. Parents may also offer emotional support in response to youth's troubles (e.g., with friends), thereby allowing youth to stay focused on their studies. Thus, adolescents' disclosure may begin a process that ultimately enhances their engagement (e.g., use of effective strategies and time on schoolwork) and achievement in school.

Adolescents' disclosure to their parents may also provide a context in which parents can foster other dimensions of their academic adjustment – namely, their investment and autonomous motivation in school. When adolescents disclose, they may set the stage for parents to highlight the importance of school. For example, when youth tell their parents about their disinterest in social studies, parents may respond by highlighting the importance and relevance of the topic, learning the material, and overcoming one's boredom to attend class – all of which may heighten youth's investment as well as engagement in school. Over time, adolescents may come to internalize parents' messages about the importance and relevance of academics, leading them to be autonomously motivated in school. However, this may depend on the context in which adolescents disclose to their parents.

The Moderating Role of Socialization Context

Consistent with Child x Parent models of development in which youth's psychological adjustment is shaped by what they and their parents bring to their interactions with one

another (e.g., Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Grusec, 2002), the socialization context in which youth's disclosure to their parents occurs may shape the role of their disclosure in their autonomous motivation. Youth's feelings of relatedness and autonomy have been identified as key to their internalization of their parents' socialization attempts by investigators working from a Self-Determination Theory perspective (e.g., Grolnick, Deci, & Ryan, 1997). Thus, when adolescents' disclosure takes place in a socialization context in which their needs for relatedness and autonomy are met, parents' responses (e.g., messages about the importance of school and provision of instruction) to their disclosure may be internalized by adolescents, thereby facilitating their autonomous motivation in school. Conversely, when adolescents' disclosure takes place in a socialization context in which such needs are not met, internalization may be undermined.

Two socialization contexts that may influence adolescents' feelings of relatedness and autonomy, and thus the effects of their disclosure to their parents, are the quality of adolescents' relationships with their parents (e.g., feelings of trust) and the extent to which their parents are autonomy supportive (e.g., permitting youth to take initiative) rather than controlling (e.g., forcing youth to meet parents' demands). Such contexts are associated with adolescents' disclosure, with their disclosure being highest when they feel close to their parents or their parents are autonomy supportive (e.g., Soenens, Vansteenkiste, Luyckx, and Goossens, 2006; Roth et al., 2010). However, the associations are of the size to suggest that some adolescents may disclose to their parents even when their relationships with them are poor or their parents are not autonomy supportive – for example, adolescents may disclose with the hope of fostering closeness to their parents or because they feel obligated to do so (Yau et al., 2009).

When adolescents disclose to their parents in the context of having positive relationships with them, they may be particularly likely to internalize their parents' socialization attempts in response to their disclosure. The more positive youth's relationships with their parents, the more they may disclose detailed information of an intimate nature (Soenens et al., 2006), allowing parents to respond more sensitively. The trust cultivated by youth's positive relationships with their parents may also make them particularly willing to take on their parents' values as their own (e.g., Furrer & Skinner, 2003). Similarly, heightened internalization may ensue from adolescents' disclosure when parents are autonomy supportive rather than controlling. The more autonomy supportive (vs. controlling) parents are, the more adolescents may disclose information not in line with their parents' expectations, as they do not anticipate negative sanctions such as love withdrawal (Roth et al., 2010). Moreover, youth may adopt the messages conveyed by their parents out of choice rather than pressure.

Consistent with the idea that the socialization context in which adolescents disclose to their parents matters, Keijsers and colleagues (2009) found that the more supportive adolescents felt their parents were, the more increases in adolescents' disclosure were predictive of decreases in their delinquency over time. A similar process may be evident for the role of adolescents' disclosure in their academic adjustment. However, it may be strongest for adolescents' autonomous motivation in school which involves internalization for which feelings of relatedness and autonomy among adolescents may be critical. Responses to adolescents' disclosure involving instruction with an emphasis on the importance of school may be sufficient to foster other dimensions of adolescents' academic adjustment such as investment, engagement, and achievement which do not necessarily involve internalization. Indeed, Cheung and Pomerantz (2011) found that the extent to which parents accompany their involvement in adolescents' learning with autonomy support (vs. control) does not matter substantially for adolescents' academic adjustment in terms of their investment,

engagement, and achievement, suggesting the sufficiency of instruction with an emphasis on the importance of school for such dimensions of adolescents' academic adjustment.

The Moderating Role of Culture

To date the research on adolescents' disclosure to their parents has been conducted exclusively in Western countries. Although there has been some attention to disclosure among adolescents of diverse ethnicities residing in the United States (e.g., Yau et al., 2009; Smetana, Villalobos, Rogge, & Tasopoulos-Chan, 2010), there has not been attention to it in non-Western countries. This represents a lacuna as adolescence in Western countries differs from adolescence in other countries (e.g., Mead, 1928; Schlegel & Barry, 1991). For example, American youth often desire independence from their parents, leading them to pull away from their parents (for a review, see Collins & Steinberg, 2006). In contrast, perhaps because the notion of filial piety is of much significance in China (e.g., Ho, 1996; Wang & Hsueh, 2000), Chinese youth remain connected to their parents (e.g., Pomerantz, Qin, Wang, & Chen, 2009, 2011; Qin, Pomerantz, & Wang, 2009). Filial piety includes, among other things, youth repaying their family for their efforts in raising them, bringing honor to their family, and making sacrifices for their family (Chao & Tseng, 2002; Ho, 1996). As they enter adolescence, Chinese youth's progress toward maturity may be marked in large part by fulfilling their filial responsibilities (Nelson & Chen, 2007; Yu, 1996). One such responsibility may be disclosing to their parents (Yau et al., 2009), leading to heightened disclosure among Chinese adolescents. However, it is possible that like youth in the West (e.g., Keijsers et al., 2009; Smetana et al., 2009), Chinese youth disclose less over the course of adolescence: Despite feeling responsible to their parents, they may be hesitant to share with their parents the new experiences of adolescence that are likely to be inconsistent with their expectations – for example, difficulties in school or romantic involvement.

Also of significance is whether the effects of adolescents' disclosure to their parents on their academic adjustment differ in the United States and China. Given that parents' knowledge of youth's lives has similar effects on their deviant behavior in Western and East Asian countries (Barber, Stolz, & Olsen, 2005), American and Chinese parents likely use the knowledge gained from youth's disclosure similarly, thereby leading to similar effects. In terms of the moderating role of the socialization context, socialization contexts such as the quality of adolescents' relationships with their parents and parents' autonomy support have similar effects in the United States and China (e.g., Pomerantz et al., 2009; Wang, Pomerantz, & Chen, 2007). However, because establishing independence from parents is central during adolescence in the United States, American youth may assign much significance to their parents reciprocating their disclosure with heightened support of their relatedness and autonomy. In contrast, in China, where the emphasis is on fulfilling filial responsibilities, with disclosure likely viewed as part of such an endeavor, the socialization context may not influence whether youth internalize parents' guidance in response to their disclosure.

Overview of Current Research

The major aim of the current research was to elucidate the role of adolescents' disclosure to their parents in their academic adjustment in the United States and China. Participants in each country were mainly of the majority ethnicity: European American in the United States and *Han* Chinese in China. Thus, the full ethnic diversity of the two countries was not represented. We followed American and Chinese youth across four waves of assessment during early adolescence (i.e., seventh and eighth grade). At each wave, youth reported on their spontaneous disclosure of everyday activities to their parents; the socialization context in which such disclosure takes place was assessed with youth's reports of the quality of their

relationships with their parents as well as their parents' autonomy support and psychological control. We assessed multiple dimensions of adolescents' academic adjustment: Investment, engagement (i.e., time on schoolwork outside of school and use of self-regulated learning strategies), autonomous (vs. controlled) motivation, and achievement (i.e., grades). This multi-dimensional approach was important to understanding not only the scope of the effects of adolescents' disclosure on their academic adjustment, but the moderating role of the socialization context. The support for relatedness and autonomy provided by such a context may contribute to adolescents' internalization which is instrumental in their autonomous motivation, but not necessarily other dimensions of their academic adjustment.

Our efforts to provide insight into the role of adolescents' disclosure to their parents in their academic adjustment went beyond that of the research to date along several lines. First, because prior research has relied solely on concurrent designs, the direction of effects underlying the positive associations revealed between youth's disclosure and their academic adjustment is unclear. The longitudinal design of the current research provides a significant window into this issue by permitting examination of the effects of youth's disclosure on their *subsequent* academic adjustment taking into account their earlier academic adjustment; this latter step ensures that any effects observed over time are not due simply to concurrent associations reflecting either third variables or the opposite direction of effects. Second, because adolescents' disclosure was assessed multiple times over the course of the current research, we were able to treat it as dynamic (for a similar approach, see Keijsers et al., 2009). This is a significant endeavor given that adolescents' disclosure declines as they progress through adolescence – at least in Western countries. The decline may be detrimental to youth during early adolescence as this is a time when they are in particular need of their parents' support of their academic endeavors given their declining academic adjustment.

Third, although prior research examining the association between adolescents' disclosure to their parents and their academic adjustment has ruled out the possibility that the effects of disclosure are due to parenting, it has not ruled out the possibility that such effects are due to the quality of adolescents' relationships with their parents. This is of importance given that not only is there a sizeable association between youth's disclosure and the quality of their relationships with their parents, but youth's feelings of relatedness to their parents are predictive of their academic adjustment (e.g., Furrer & Skinner, 2003; Jacobsen & Hofman, 1997). Thus, the current research took into account the quality of adolescents' relationships with their parents. Fourth, the focus on the socialization context as a moderator of youth's disclosure is a significant extension of prior research, given that there has been almost no examination of such a context as a moderator of the effects of youth's disclosure. Fifth, studying both American and Chinese youth permitted the evaluation of the cultural specificity of youth's disclosure, thereby going beyond the exclusive Western focus of prior research.

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 (Pomerantz et al., 2009; Qin et al., 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 (for more information on the schools and

areas, see Qin et al., 2009; Wang & Pomerantz, 2009). 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 64% of American parents and 59% of Chinese parents provided permission for children to participate.

Procedure

Data were collected in the 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). At each wave, adolescents completed questionnaires during two 45-minute sessions. Trained native research staff read the instructions and items aloud to the adolescents in their native language in the classroom. Adolescents received a small gift (e.g., a calculator) as a token of appreciation at the end of each session. The average attrition rate over the entire study was 4% (2% in the United States and 6% in China). Over 80% of the youth had data for all of the analyses at all four waves of the study, with over 98% having data for all of the analyses at two or more waves. At Wave 1, adolescents with no missing data differed from those with missing data in that they had more positive relationships with their parents, their parents were less psychological controlling, and they obtained better grades, $t_s > 2.20$, $p_s < .05$.

Measures

The measures were originally created in English. Standard translation and back-translation procedures (Brislin, 1980) were employed to ensure equivalence between the English and Chinese versions. Linguistic factors were taken into account to ensure that the measures were comprehensible to adolescents in the two countries. Prior reports of data from this study examining the quality of the relationships between children and parents, parents' autonomy support and psychological control, and the multiple dimensions of children's academic adjustment in the United States and China provide evidence for the concurrent and predictive validity of these measures in the two countries (e.g., Cheung & Pomerantz, 2011; Pomerantz et al., 2009; Wang & Pomerantz, 2009; Wang et al., 2007).

Disclosure to parents—Adolescents' spontaneous disclosure to their parents about their daily activities was assessed with a 10-item measure. Five items (e.g., "I often start conversations with my parents about what happens in school.") were drawn from the measures used by Kerr and Stattin (2000; Stattin & Kerr, 2000) with minor modifications to ensure their relevance to early adolescents in the United States and China. An additional five items (e.g., "I keep a lot of secrets from my parents about what I do during my free time.") were added to ensure the assessment of both the sharing and withholding of information on a range of personal issues, including academics. Youth indicated (1 = not at all true; 5 = very true) the extent to which each item was true of them. The 10 items were combined such that higher numbers reflect greater disclosure ($\alpha_s = .85$ to $.86$ in the United States and $.82$ to $.87$ in China).

Socialization context—The *quality of adolescents' relationships with their parents* was assessed with the Inventory of Parent Attachment (Armsden & Greenberg, 1987). One ("My parents have their own problems, so I don't bother them with mine.") of the original 25 items was dropped because its association with the other items suggested it reflected a poor quality relationship in the United States but not China. The measure assesses trust, communication, and alienation in youth's relationships with their parents. The trust scale is composed of 10 items assessing adolescents' perceptions of their parents' responsiveness, respect, and warmth toward them (e.g., "My parents respect my feelings."). Eight items

comprise the communication scale which assesses the quality of communication between parents and adolescents (e.g., “My parents can tell when I’m upset about something.”). The alienation subscale assesses adolescents’ feelings of resentment toward and emotional isolation from their parents with six items (e.g., “I feel angry with my parents.”). Youth indicated how true each item was of them (1 = not at all true; 5 = very true). Given the strong associations between the trust, communication, and alienation scales ($r_s = .56$ to $.85$ in the United States and $.42$ to $.83$ in China, $p_s < .001$), they were combined, such that higher numbers represent better relationship quality ($\alpha_s = .79$ to $.82$ in the United States and $.80$ to $.82$ in China).

Twelve items adopted from prior research were used to measure *parents’ autonomy support* (McPartland & Epstein, 1977; Robbins, 1994; Steinberg, Lamborn, Dornbusch, & Darling, 1992). Adolescents indicated (1 = not at all true; 5 = very true) the extent to which their parents used autonomy supportive practices (e.g., “My parents allow me to make choices whenever possible.” and “My parents are usually willing to consider things from my point of view.”). The items were combined, with higher numbers reflecting greater autonomy support ($\alpha_s = .87$ to $.89$ in the United States and $.88$ to $.89$ in China).

Parents’ psychological control was assessed with 18 items adopted from prior research (Barber, 1996; Silk, Morris, Kanaya, & Steinberg, 2003) or created for this research (Wang, et al., 2007). Adolescents indicated (1 = not at all true; 5 = very true) the extent to which their parents used psychologically controlling practices (e.g., “My parents tell me that I should feel guilty when I do not meet their expectations.” and “My parents act cold and unfriendly if I do something they do not like.”). The mean of the items was taken, with higher numbers reflecting greater psychological control ($\alpha_s = .92$ to $.95$ in the United States and $.89$ to $.93$ in China).

Academic adjustment—Youth’s *investment in school* was assessed with a modified version of Pomerantz, Saxon, and Oishi’s (2000) measure. For each of four core subjects (language arts, math, science, and social studies in the United States; language arts, math, biology, and English in China), they indicated (1 = not at all important; 7 = very important) how important it was for them to do well (e.g., “How important is it to you to do well in math?”) and avoid doing poorly (e.g., “How important is it to you to avoid doing poorly in language arts?”). The eight items were combined, with higher numbers reflecting greater investment ($\alpha_s = .91$ to $.94$ in the United States and $.88$ to $.91$ in China).

The amount of *time spent on schoolwork* outside of school was assessed with a modified version of the scale used by Fuligni, Tseng, and Lam (1999). Adolescents indicated how much time they spent on their schoolwork outside of school on a typical weekday and weekend (1 = less than 1 hour; 6 = more than 5 hours). Their responses for a typical weekday were weighted by five and combined with those for each day of a typical weekend day weighted by two, with higher numbers reflecting more time spent on schoolwork outside of school ($r_s = .48$ to $.64$ in the United States and $.41$ to $.52$ in China, $p_s < .001$).

The 30-item Dowson and McInerney (2004) Goal Orientation and Learning Strategies Survey was used to assess adolescents’ *self-regulated learning strategies*. Three scales assess meta-cognitive strategies: six items assess monitoring (e.g., “I check to see if I understand the things I am trying to learn.”), six assess planning (e.g., “I try to plan out my schoolwork as best as I can.”), and six assess regulating (e.g., “If I get confused about something at school, I go back and try to figure it out.”). Two scales assess cognitive strategies: six items assess rehearsal (e.g., “When I want to learn things for school, I practice repeating them to myself.”) and six assess elaboration (e.g., “I try to understand how the things I learn in school fit together with each other.”). Youth indicated the extent to which each of the 30

statements was true of them (1 = not at all true; 5 = very true). Given the strong associations between the meta-cognitive and cognitive strategies ($r_s = .56$ to $.86$ in the United States and $.45$ to $.80$ in China, $p_s < .001$), the scales for the two were combined, with higher numbers representing greater self-regulated learning strategies ($\alpha_s = .96$ to $.97$ in the United States and $.93$ to $.96$ in China).

Youth's *autonomous motivation* was assessed with the Academic Self-Regulation Questionnaire (Ryan & Connell, 1989). This questionnaire consists of statements describing four types of reasons for engaging in various academic activities. Across the activities, there are seven statements about intrinsic reasons (e.g., "I do my homework because it's fun." $\alpha_s = .87$ to $.90$ in the United States and $.83$ to $.94$ in China); seven about identified reasons (e.g., "I work on my classwork because it's important to me to do so." $\alpha_s = .86$ to $.91$ in the United States and $.84$ to $.90$ in China); nine about introjected reasons (e.g., "I work on my classwork because I'll be ashamed of myself if it doesn't get done." $\alpha_s = .87$ to $.91$ in the United States and $.78$ to $.87$ in China); and nine about external reasons (e.g., "I do my homework because I'll get in trouble if I don't." $\alpha_s = .80$ to $.88$ in the United States and $.67$ to $.77$ in China). Adolescents indicated how true (1 = not at all; 5 = very) each statement was of them. Following Ryan and Connell (1989), an index of relative autonomy was created by weighting the controlled motivation composite negatively (i.e., the mean of the extrinsic reasons was weighted by negative two and the mean of the introjected reasons was weighted by negative one) and the autonomous motivation composite positively (i.e., the mean of the intrinsic reasons was weighted by positive two and the mean of the identified reasons was weighted by positive one), with higher numbers indicating greater autonomous (vs. controlled) motivation.

Adolescents' *grades* in four core subjects (see the description of the investment measure) were obtained from schools. Grades in the American schools were originally in letters and were converted to numbers (F = 0 to A+ = 12). In the Chinese schools, grades were originally numerical, ranging from 0 to 100 in one school and from 0 to 120 in the other. In both the United States and China, grades were standardized within school to take into account differences in the grading systems of the schools. The mean across the four subjects was taken, with higher numbers reflecting better achievement.

Results

We conducted three sets of analyses within the framework of Structural Equation Modeling (SEM) with AMOS 17.0 (Arbuckle, 1995–2008). AMOS handles missing data with Full Information Maximum Likelihood (FIML) estimates which provide more reliable standard errors to handling missing data under a wider range of conditions than does not only list- and pair-wise deletion, but also mean-imputation (Wothke, 2000). First, in a set of preliminary analyses, we evaluated the equivalence of the measures between the United States and China over the four waves of the study. Second, we examined whether there were changes in the United States and China in adolescents' disclosure to their parents as they entered a new school and moved through the seventh and eighth grades. Third, we evaluated the role of adolescents' disclosure in their academic adjustment over time in the two countries, with attention to whether the effects were accounted for by the quality of adolescents' relationships with their parents. In an additional set of analyses using multiple hierarchical regression with multiple-imputation to handle missing data, we explored whether the effects of American and Chinese adolescents' disclosure on their academic adjustment was moderated by the socialization context.

Measurement Equivalence

Factorial and intercept invariance is essential and sufficient in making valid comparisons of the associations and means of the constructs (e.g., Little, 1997). With the exception of the measure of adolescents' disclosure to their parents, tests of such measurement equivalence between the United States and China for the measures included in this report have been presented in prior reports (Cheung & Pomerantz, 2011; Pomerantz et al., 2009; Wang & Pomerantz, 2009; Wang et al., 2007). As described in those reports, a series of two-group Confirmatory Factor Analyses (CFAs) in the context of SEM were conducted to examine the factorial and intercept equivalence of the measures between the two countries as well as across the four waves of the study. For each measure, an unconstrained model in which all the parameters are freely estimated was compared with constrained models (i.e., factorial and intercept invariance models) in which the parameters of interest are specified as equal across the two countries and four waves. The differences in the Tucker-Lewis Index (TLI) and the Root Mean Square Error of Approximation (RMSEA) yielded by the comparisons were less than .05, which Little (1997) suggests provides support for the factorial and intercept equivalence of the measures between countries and over time.

Following the same procedure, the factorial and intercept equivalence for youth's disclosure to their parents was evaluated. In the unconstrained model, the same latent construct of disclosure was repeatedly assessed over the four waves yielding a total of four latent constructs allowed to correlate with one another. Each construct was represented by two indicators based on randomly identified parcels of the disclosure measure. Errors of the same indicators over time were also allowed to correlate (McDonald & Ho, 2002) when suggested by modification indexes from the CFAs conducted on the sample with no missing data. The parameters in the unconstrained model 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 constrained to be equal across countries and waves. The models fit the data adequately, CFIs > .97, TLIs > .95, RMSEAs < .06. Moreover, the unconstrained model did not fit substantially better than the constrained models as indicated by differences of less than .05 in the TLIs and RMSEAs. Hence, as with the other measures, valid comparisons of the associations and means can be made between the United States and China for adolescents' disclosure to their parents.

Does Disclosure Change over Time?

American and Chinese youth's disclosure to their parents as they progress through early adolescence was examined with sets of two-group SEM growth curve analyses. Each model consisted of two latent constructs – one representing the intercept (i.e., initial level of disclosure) and the other representing the slope of a linear growth curve (i.e., change rate of disclosure over time). The mean of adolescents' disclosure at each wave served as indicators for the intercept and slope factors, with loadings specified as 1 for the intercept factor and 0, 1, 2, 3 for the slope factor. In the unconstrained model, all parameters were freely estimated. In the more parsimonious constrained model, the means of the intercept and slope factors were specified to be equal between the two countries. A country difference was determined by a significant chi-square difference ($\Delta\chi^2$) between the unconstrained model and each of the constrained models. Given prior research indicating that girls disclose to their parents more than do boys during adolescence (e.g., Crouter et al., 2005; Cumsille, Darling, & Martinez, 2010), we also examined a model including sex (0 = boy; 1 = girl) as a predictor of both the intercept and the slope of youth's disclosure to their parents. Variation in sex differences in the two countries was 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.

The models fit the data adequately, CFIs > .97, TLIs > .94, RMSEAs < .07. The model constraining the intercept of disclosure to be equal between the United States and China fit worse than the unconstrained model, $\Delta\chi^2 (N = 825) = 14.50, p < .01$: At the beginning of seventh grade (Wave 1), American youth reported disclosing less to their parents than did their Chinese counterparts. As is evident in Table 1, this difference continued over time: The model constraining the slope of adolescents' disclosure to their parents between the United States and China fit the data as well as the unconstrained model, $\Delta\chi^2 (N = 825) < 1$, indicating that adolescents' disclosure to their parents declined over time similarly in the two countries (slopes = $-.05$ in the United States and China, $ps < .001$). Notably, within each country there was substantial variability in both the intercept ($.59$ in the United States and $.56$ in China, $ps < .001$) and slope ($.03$ in both countries, $ps < .001$). American and Chinese girls disclosed more to their parents than did boys during the fall of seventh grade ($\beta s = .12$ in both countries, $ps < .01$), $\Delta\chi^2 (N = 825) < 1$. The decline in girls and boys' disclosure did not differ in the two countries ($\beta s = .06$ in both countries, ns), $\Delta\chi^2 (N = 825) = 3.42, ns$.

Does Disclosure Predict Academic Adjustment over Time?

To examine the effect of adolescents' disclosure to their parents on their academic adjustment over time, a two-group structural model for each dimension of their academic adjustment was evaluated. As shown in Figure 1, the intercept and slope of youth's disclosure were used to predict their academic adjustment at Wave 4 while adjusting for it at Wave 1. The disclosure intercept and academic adjustment at Wave 1 were allowed to covary. To identify whether there were differences in the effects of disclosure in the United States and China, the unconstrained model was compared to more parsimonious models with constraints of equal path coefficients imposed between the two countries on the longitudinal path between the disclosure intercept and academic adjustment at Wave 4 (i.e., the longitudinal intercept effect) and the path between the disclosure slope and academic adjustment at Wave 4 (i.e., the slope effect), with each constraint imposed in a separate model. A significant difference ($\Delta\chi^2$) between the unconstrained model and each of the more parsimonious constrained models indicates that the corresponding path differed by country.

The models fit the data adequately, CFIs > .94, TLIs > .91, RMSEAs < .07. As shown in Table 2, consistent with expectations, adolescents' disclosure to their parents at the beginning of seventh grade (Wave 1) predicted their enhanced investment, time spent on schoolwork outside of school, self-regulated learning strategies, and achievement at the end of eighth grade (Wave 4) taking into account such academic adjustment at the beginning of seventh grade. A comparable pattern emerged when the disclosure slope effect was examined: The more youth maintained their disclosure over the seventh and eighth grades, the better their investment, time spent on schoolwork outside of school, self-regulated learning strategies, and achievement at the end of eighth grade (see Table 2). These effects did not differ in the United States and China as indicated by the more parsimonious constrained models fitting the data as well as the unconstrained models, $\Delta\chi^2 s (N = 825) < 1.50, ns$. Adolescents' disclosure to their parents also predicted their heightened autonomous motivation over time. However, the longitudinal intercept effect was evident only in China, $\Delta\chi^2 (N = 825) = 9.20, p < .01$. In both countries, adolescents' maintenance of their disclosure predicted heightened autonomous motivation at the end of eighth grade, $\Delta\chi^2 (N = 825) = 1.39, ns$.

Consistent with prior research, as shown in Table 1, the more adolescents reported disclosing to their parents about their everyday activities, the more they reported having better relationships with them ($r s = .59$ to $.67$ in the United States and $.68$ to $.73$ in China, $ps < .001$). Moreover, in models similar to those in which adolescents' disclosure to their

parents predicted their subsequent academic adjustment, the quality of adolescents' relationships with their parents demonstrated an almost identical role to that of their disclosure (see Table 3). Thus, we revisited the effects of youth's disclosure on their academic adjustment, taking into account the contribution of the quality of their relationships with their parents. In a series of two-group SEM models, we included the intercepts and slopes of disclosure and relationship quality in a single model as simultaneous, correlated predictors of academic adjustment at the end of eighth grade adjusting for academic adjustment at the beginning of seventh grade. Because of the increased complexity of these models, errors of the indicators of disclosure and relationship quality assessed at the same wave were allowed to covary when such specification was required to ensure the fit of the models.

The models fit the data adequately, CFIs > .94, TLIs > .90, RMSEAs < .07. As shown in Table 2, most of the effects of adolescents' disclosure remained evident even when the quality of their relationships with their parents was included as a covariate in the models. The longitudinal intercept and slope effects of adolescents' disclosure on their investment, time spent on schoolwork, and self-regulated learning remained, with no differences between the United States and China, $\Delta\chi^2$ s ($N = 825$) < 2.80, *ns*. However, the longitudinal intercept and slope effects on relative autonomy and achievement were no longer evident in either country, $\Delta\chi^2$ s ($N = 825$) < 1. Contrary to the pattern evident for disclosure, all of the effects of relationship quality on academic adjustment were no longer evident with disclosure in the models (see Table 3): The effects of the quality of adolescents' relationships with their parents on their investment, time spent on schoolwork, self-regulated learning, relative autonomy, and achievement were all reduced so that they were no longer significant in the United States and China, $\Delta\chi^2$ s ($N = 825$) < 2.40, *ns*.

Does Socialization Context Moderate the Effects of Disclosure over Time?

To examine whether the socialization context moderates the effects of adolescents' disclosure on their academic adjustment, we employed multiple hierarchical regression analyses. We used this approach, instead of SEM, to preserve the continuous nature of the context variables (i.e., relationship quality, autonomy support, and psychological control). Indeed, dichotomizing continuous variables using mean or median splits, as would be necessary if two-group SEM was to be used in a manner similar to the earlier analyses, often results in biased estimates (e.g., MacCallum, Zhang, Preacher, & Rucker, 2002). Because list- and pair-wise deletion of missing observations as well as mean-imputation of such observations may yield biased estimates, missing values were imputed using multiple-imputation (Rubin, 1987; Schafer & Graham, 2002). Multiple-imputation generates possible values for missing values to create several "complete" sets of data. Five imputed data sets were created using the Fully Conditional Specification (FCS) method in SPSS 17.0 (SPSS Inc., 2008), in which all observed values are represented and missing values are estimated. The results of the analyses across the five data sets were combined, taking into account the variability in imputed values across the data sets. For comparison purposes, the same analyses were also conducted with the original data set with missing values; these analyses yielded findings identical to those conducted with the combined imputed data sets.

Each dimension of adolescents' academic adjustment was predicted from each socialization context in a separate analysis. As shown in Table 4, in the first step, adolescents' academic adjustment at the end of eighth grade (Wave 4) was predicted from such adjustment at the beginning of seventh grade (Wave 1) and country which was contrast coded ($-1 =$ United States; $1 =$ China). The second step included adolescents' disclosure and the socialization context (e.g., parents' autonomy support) at the beginning of seventh grade, which were mean-centered. In the third step, the two-way interactions between disclosure, socialization context, and country were entered (i.e., Disclosure x Socialization Context, Disclosure x

Country, and Socialization Context x Country). In the final step, the Disclosure x Socialization Context x Country interaction was entered to evaluate whether the moderating role of the socialization context varies by country.

Our key hypothesis was that the moderating role of the socialization context would be most evident for youth's autonomous motivation given the importance of internalization for such motivation. Consistent with this hypothesis, as shown in Table 4, the effects of adolescents' disclosure to their parents on their subsequent autonomous motivation were moderated by the quality of adolescents' relationships with their parents and their parents' autonomy support as indicated by Disclosure x Socialization Context interactions, $t_s > 2.43$, $p_s < .05$. A Disclosure x Socialization Context x Country interaction was also evident for both these socialization contexts as well as that of parents' psychological control, $t_s > 2.19$, $p_s < .05$, indicating that the moderating effects of socialization context differed by country. Indeed, when the analyses were conducted within each country, the Disclosure x Socialization Context interactions were evident in the United States, $t_s > 2.73$, $p_s < .01$, but not China, $t_s < 1$.

Decomposition of the interactions in the United States following Aiken and West (1991) revealed a similar pattern for each of the three socialization contexts. As shown in Figure 2a, among American adolescents who reported having positive relationships with their parents (i.e., one standard deviation above the mean), the more they disclosed to their parents, the more autonomously motivated they were two years later taking into account their earlier autonomous motivation, $\beta = .17$, $p < .05$; a similar pattern was evident among American adolescents reporting heightened (i.e., one standard deviation above the mean) parental autonomy support, $\beta = .20$, $p < .01$ and dampened (i.e., one standard deviation below the mean) psychological control, $\beta = .18$, $p < .01$. In contrast, among American adolescents reporting less positive relationships with their parents (i.e., one standard deviation below the mean), the more they disclosed, the less autonomously motivated they were over time, $\beta = -.21$, $p < .05$, with a similar pattern for dampened parental autonomy support, $\beta = -.19$, $p < .05$, and heightened parental psychological control, $\beta = -.09$, ns , although this last effect did not reach significance.

As indicated by the lack of Disclosure x Socialization Context interactions in China, the pattern of effects in this country was quite different than in the United States. In the analyses examining the moderating role of the quality of youth's relationships with their parents in China, this aspect of context had a positive effect on youth's subsequent relative autonomy regardless of youth's disclosure to their parents, $\beta = .13$, $p < .05$, which did not have an effect (see Figure 2b), $\beta = .07$, ns . When the moderating role of parents' autonomy support was examined in China, there was no effect of parents' autonomy support on adolescents' subsequent relative autonomy over and above their disclosure, $\beta = .07$, ns ; disclosure had a positive effect regardless of parents' autonomy support, $\beta = .13$, $p < .05$, which was not the case in the United States, $\beta = .00$, ns . In analyses examining the moderating role of psychological control in China, this aspect of context predicted dampened subsequent relative autonomy among children regardless of their disclosure, $\beta = -.09$, $p < .05$; a pattern which was not evident in the United States, $\beta = .04$, ns ; adolescents' disclosure continued to have an effect regardless of their parents' psychological control, $\beta = .13$, $p < .05$, unlike in the United States, $\beta = .04$, ns .

The moderating role of the socialization context identified in the United States was not evident for the other dimensions of adolescents' academic adjustment with one exception: In predicting adolescents' achievement over time, there was a Disclosure x Relationship Quality interaction, $t(722) = 2.08$, $p < .05$, which was not moderated by country, $t(722) = -1.09$, ns . For adolescents with more positive relationships with their parents (i.e., one

standard deviation above the mean), the more they disclosed, the better their achievement, $\beta = .07$, $p < .05$; for adolescents with less positive relationships with their parents (i.e., one standard deviation below the mean), their disclosure was not predictive of their achievement, $\beta = -.01$, *ns*.

Discussion

Although knowledge about youth's disclosure to their parents during adolescence has grown exponentially over the last decade (for reviews, see Kerr & Stattin, 2003; Smetana, 2010), relatively little is known about its role in adolescents' academic adjustment. The current research implicates youth's disclosure to their parents in the development of their academic adjustment during the early adolescent years in both the United States (mainly European American) and China (mainly *Han* Chinese), with heightened disclosure predicting enhanced academic adjustment over time. Notably, the possibility that the effects of adolescents' disclosure are due to concurrent associations between their disclosure and academic adjustment as well as the effects of the quality of adolescents' relationships with their parents was ruled out. A key extension of prior research was the identification of the moderating role of the socialization context: Consistent with Child x Parent models of development (e.g., Collins et al., 2000; Grusec, 2002), socialization contexts likely to promote relatedness (i.e., heightened positive relationships between youth and parents) and autonomy (i.e., heightened parental autonomy support and dampened parental psychological control) among youth amplified the enhancing effects of youth's disclosure on their autonomous motivation. However, this pattern was evident only in the United States.

The role of adolescents' disclosure to their parents in their academic adjustment identified in the current research paralleled the protective role of such disclosure in adolescents' deviant behavior (e.g., Soenens et al., 2006; Kerr et al., 2010): Adolescents' disclosure predicted their enhanced investment, time spent on schoolwork, self-regulated learning, and achievement over time, with the effects being similar in magnitude in the United States and China. Notably, these effects of youth's disclosure as they entered seventh grade on their academic adjustment at the end of eighth grade were evident over and above their academic adjustment as they entered seventh grade. Thus, the concurrent associations between youth's disclosure and their academic adjustment during adolescence revealed by prior research (Kerr & Stattin, 2000; Roth et al., 2009) reflect, at least in part, an effect of youth's disclosure. Moreover, although adolescents' disclosure to their parents was substantially associated with the quality of their relationships with them, there was little evidence that the effects were due to the quality of their relationships: Youth's disclosure remained predictive of their academic adjustment even when the quality of their relationships with their parents was taken into account, with the exception of their autonomous motivation and achievement. Notably, the quality of youth's relationships with their parents was also no longer predictive of these two dimensions of youth's academic adjustment once their disclosure was taken into account. This along with the moderating role of socialization context identified for children's autonomous motivation and achievement reflects the mutual role of disclosure and relationship quality in these two dimensions.

A key contribution of the current research was that in addition to examining the effects of youth's disclosure to their parents as they entered seventh grade, the effects of the trajectories of their disclosure over the seventh and eighth grades were examined. Replicating prior research conducted in the West (e.g., Keijsers et al., 2009), adolescents' disclosure to their parents declined during this phase of development. Notably, this trend was evident in not only the United States, but also China where youth disclosed more on average than in the United States. It appears that although concerns with fulfilling filial responsibilities may lead to heightened disclosure among Chinese youth, such concerns may

be overridden to some extent by their feeling that some of the new experiences (e.g., difficulties in school and romantic activities) of adolescence are too inconsistent with their parents' expectations to share with them. In both the United States and China, despite the normativeness of the decline in youth's disclosure, it consistently predicted dampened academic adjustment among youth at the end of eighth grade over and above their academic adjustment at the beginning of seventh grade. There was little evidence that the effects of the trajectories were simply due to the trajectories of the quality of children's relationships with their parents.

Drawing on applications of Self-Determination Theory to the socialization process (e.g., Grolnick et al., 1997), we proposed that for adolescents' disclosure to their parents to foster internalization, it needs to take place in socialization contexts supporting their relatedness and autonomy. Consistent with this proposal, as well as Child x Parent models of development (e.g., Collins et al., 2000; Grusec, 2002), when adolescents had positive relationships with their parents, their disclosure predicted their heightened autonomous motivation and achievement in school over time; when parents' autonomy support was high and their control was low, adolescents' disclosure played a similar facilitating role in their autonomous motivation. Conversely, adolescents' disclosure predicted their dampened autonomous motivation over time when their relationships with their parents were poor or parents' autonomy support was low. However, the moderating role of the socialization context in youth's autonomous motivation was evident only in the United States. In China, youth's disclosure to their parents was generally predictive of their autonomous motivation over and above the socialization context which had similar, if not stronger, effects than in the United States.

This difference may be due to differences in adolescence in the two countries. In the United States, adolescents' desire for independence from their parents may lead youth to assign much significance to their parents reciprocating their disclosure with heightened support of their relatedness and autonomy. American adolescents may feel that sharing information about their lives with their parents is an intimate act of choice that should be treated as such. In contrast, Chinese adolescents may be concerned with fulfilling their filial responsibilities which may include disclosing to their parents about their everyday activities, thereby allowing parents to take part in their lives. Thus, once Chinese youth take the step of disclosing to their parents, they may be more willing than are their American counterparts to embrace their parents' values regardless of the context. Additional research is needed to understand why context moderates the effects of disclosure in the United States, but not China. In this vein, elucidating the motivation behind youth's disclosure in the two countries may prove fruitful.

Limitations and Future Directions

Although representing a significant contribution to understanding the role of adolescents' disclosure to their parents in their academic adjustment, the current findings should be interpreted in light of several limitations. First, following much prior research (e.g., Kerr & Stattin, 2000; Smetana et al, 2006), we relied on youth's reports of their disclosure. We did so because youth may have more accurate knowledge of their disclosure compared to other informants, such as parents and observers. The reliance on reports from adolescents for both their disclosure and academic adjustment (with the exception of their achievement) could inflate the associations observed. This issue was addressed to a large extent by taking adolescents' earlier academic adjustment as well as the quality of their relationships with their parents into account in the analyses. However, the use of youth's reports of their disclosure limits our knowledge regarding its dynamics in the interactions of youth and their parents. Thus, it was not possible to gain insight into the conditions eliciting adolescents' disclosure, the quality of their disclosure, and parents' responses to it, which may all not

only moderate the role of adolescents' disclosure in their academic adjustment, but also vary with development and culture. Observations of youth's disclosure to their parents, similar to those used by Hare, Marston, and Allen (2011) to assess youth's sharing of their emotions with their parents, are likely to provide such insight.

Second, our measure of adolescents' disclosure to their parents asked them about their disclosure of a host of everyday activities (e.g., what happens at school, with friends, and during free time). However, research conducted in the United States suggests that the rate of adolescents' disclosure varies as a function of the domain of the activities (e.g., Yau et al., 2009). Moreover, because youth's disclosure in different domains may yield different information as well as elicit different responses from parents, it is possible that *what* youth share with their parents determines the role of their disclosure in their academic adjustment. For example, when adolescents disclose about activities they view as personal (e.g., their choice of friends), they may be less open to their parents' responses, such that the socialization context may be critical for internalization. In contrast, when youth disclose about activities they view as prudential (e.g., their use of alcohol) given the weight of the issues, they may be more accepting of their parents' responses regardless of the context. It is also possible that American and Chinese adolescents may disclose to their parents about different domains of their lives. We conducted exploratory analyses of the items comprising our disclosure measure in which we examined youth's disclosure about academics, friends, and general activities separately. These analyses indicated that American youth consistently disclosed less than did Chinese youth about each of the three domains across the seventh and eighth grade, with a decline in disclosure across all three in both the United States and China.

Third, the samples used in the current research do not represent the diversity of the United States and China. Thus, questions remain concerning variations within each of the countries in the extent of youth's disclosure to their parents as well as its role in their academic adjustment. Indeed, in the United States, youth's disclosure to their parents varies with their ethnic background: For example, Chinese American adolescents tend to disclose less about their personal feelings to their parents than do their European and Mexican American counterparts (Yau et al., 2009). In addition, in China, differences between urban and rural areas may contribute to differences in adolescents' disclosure as well. In urban areas where there has been heightened Westernization, possibly leading to greater exposure to messages promoting individuality, adolescents may disclose less to their parents than do their counterparts in rural areas. In addition, because adolescents in urban (vs. rural) areas spend less time with their parents (Larson & Verma, 1999), their disclosure may be a more unique source of information about their daily lives, leading it to be more influential. Consistent with the idea that youth's disclosure may not be culturally homogenous, we found substantial variability in youth's disclosure over the seventh and eighth grades within both the United States and China.

Conclusions

The current research advances knowledge about youth's disclosure to their parents by elucidating its role in youth's academic adjustment over time in the United States and China. The findings support the perspective that youth's disclosure enhances their subsequent academic adjustment during the early adolescent years when youth are often at risk academically. Notably, the positive effects of youth's disclosure are not simply due to youth who disclose to their parents having a better relationship with them. A key finding of the current research is that the context in which disclosure takes place also matters for youth's internalization – albeit only in the United States: The positive effects of American youth's disclosure on their autonomous motivation in school, but not other dimensions of their academic adjustment, were consistently facilitated when their disclosure occurred in a

positive socialization context (e.g., autonomy-supportive parenting), but undermined when it occurred in a negative socialization context (e.g., controlling parenting).

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Figure 1.

Schematic illustration of the structural equation models predicting adolescents' academic adjustment from the intercept and slope of their disclosure to their parents, adjusting for adolescents' initial academic adjustment. Each latent construct of adolescents' adjustment was based on two to four conceptually determined indicators. For simplicity, these indicators and the error terms are not included.

Figure 2a.

Figure 2b.

Figure 2.

Figure 2a. Effects of adolescents' disclosure to their parents as a function of the quality of their relationships with their parents in the United States. *Note.* Slopes were estimated from the regression equation for the United States.

Figure 2b. Effects of adolescents' disclosure to their parents as a function of the quality of their relationships with their parents in China. *Note.* Slopes were estimated from the regression equation for China.

Table 1
Associations Between Adolescents' Disclosure to Parents and Socialization Context

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Disclosure																
1. Wave 1		.73	.64	.61	.68	.57	.52	.49	.50	.42	.42	.40	-.21	-.22	-.16	-.17
2. Wave 2	.68		.73	.69	.56	.71	.60	.55	.40	.56	.49	.42	-.20	-.28	-.23	-.24
3. Wave 3	.67	.72		.76	.52	.57	.71	.61	.41	.44	.55	.45	-.21	-.23	-.26	-.22
4. Wave 4	.56	.60	.70		.49	.55	.64	.73	.42	.42	.51	.58	-.21	-.24	-.22	-.32
Relationship quality																
5. Wave 1	.66	.56	.54	.45		.70	.65	.63	.72	.51	.53	.49	-.38	-.38	-.24	-.25
6. Wave 2	.52	.64	.52	.44	.77		.72	.67	.55	.75	.59	.56	-.28	-.46	-.35	-.31
7. Wave 3	.43	.52	.59	.48	.69	.70		.76	.56	.57	.70	.57	-.28	-.38	-.45	-.36
8. Wave 4	.40	.46	.51	.67	.57	.64	.73		.51	.54	.60	.75	-.25	-.36	-.34	-.50
Autonomy support																
9. Wave 1	.54	.41	.41	.35	.76	.59	.51	.45		.59	.58	.50	-.27	-.28	-.19	-.20
10. Wave 2	.40	.48	.40	.31	.55	.73	.51	.45	.59		.62	.56	-.12	-.21	-.28	-.28
11. Wave 3	.31	.43	.47	.35	.45	.51	.68	.50	.51	.61		.62	-.19	-.30	-.19	-.25
12. Wave 4	.27	.32	.37	.51	.37	.43	.50	.71	.43	.45	.54		-.21	-.25	-.19	-.21
Psychological control																
13. Wave 1	-.36	-.36	-.30	-.21	-.52	-.43	-.36	-.29	-.36	-.31	-.27	-.22		.58	.52	.43
14. Wave 2	-.29	-.35	-.25	-.17	-.45	-.53	-.37	-.33	-.30	-.31	-.29	-.20	.68		.62	.55
15. Wave 3	-.28	-.33	-.31	-.20	-.48	-.47	-.51	-.39	-.38	-.36	-.37	-.31	.62	.69		.60
16. Wave 4	-.28	-.29	-.28	-.34	-.36	-.42	-.42	-.53	-.28	-.35	-.37	-.40	.51	.60	.70	
Means																
United States	3.15	3.09	3.06	3.04	3.83	3.72	3.75	3.64	3.43	3.34	3.38	3.32	2.57	2.51	2.49	2.54
China	3.41	3.25	3.29	3.23	3.59	3.43	3.52	3.51	3.39	3.32	3.37	3.40	2.77	2.92	2.95	2.94

Note. Correlations for the American sample are presented in the lower triangle; those for the Chinese sample are presented in the upper triangle. Correlations with absolute values greater than .10 are significant at $p < .05$; those with absolute values greater than .13 are significant at $p < .01$; those with absolute values greater than .17 are significant at $p < .001$.

Table 2

Effects of Adolescents' Disclosure to Parents on Academic Adjustment Over Time

Academic adjustment	United States		China	
	Std.	Unstd. (SE)	Std.	Unstd. (SE)
Investment				
Longitudinal intercept effect	.26	.42 (.06) **	.28	.42 (.06) ***
(Adjusted for relationship quality)	.19	.32 (.10) ***	.20	.32 (.10) ***
Slope effect	.28	2.02 (.35) ***	.32	2.02 (.35) ***
(Adjusted for relationship quality)	.27	2.00 (.69) **	.30	2.00 (.69) **
Time on schoolwork				
Longitudinal intercept effect	.18	1.34 (.35) ***	.12	1.34 (.35) ***
(Adjusted for relationship quality)	.22	1.69 (.55) **	.14	1.69 (.55) **
Slope effect	.12	4.53 (2.23) *	.10	4.53 (2.23) *
(Adjusted for relationship quality)	.19	6.76 (3.16) *	.14	6.76 (3.16) *
Self-regulated learning strategies				
Longitudinal intercept effect	.31	.37 (.04) ***	.36	.37 (.04) ***
(Adjusted for relationship quality)	.34	.41 (.07) ***	.41	.41 (.07) ***
Slope effect	.33	1.65 (.23) ***	.39	1.65 (.23) ***
(Adjusted for relationship quality)	.17	.87 (.47) *	.21	.87 (.47) *
Autonomous motivation				
Longitudinal intercept effect	.02	.07 (.24)	.23	1.09 (.26) ***
(Adjusted for relationship quality)	.09	.31 (.21)	.09	.31 (.21)
Slope effect	.18	3.68 (.99) ***	.19	3.68 (.99) ***
(Adjusted for relationship quality)	.12	1.94 (1.13)	.13	1.94 (1.13)
Achievement				
Longitudinal intercept effect	.07	.09 (.03) ***	.07	.09 (.03) ***
(Adjusted for relationship quality)	.03	.03 (.04)	.03	.03 (.04)
Slope effect	.05	.28 (.14) *	.06	.28 (.14) *
(Adjusted for relationship quality)	.01	.39 (.29)	.01	.39 (.29)

Note. Unstd. = Unstandardized estimates; Std. = Standardized estimates.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3

Effects of Adolescents' Relationship Quality on Academic Adjustment Over Time

Academic adjustment	United States		China	
	Std.	Unstd. (SE)	Std.	Unstd. (SE)
Investment				
Longitudinal intercept effect	.25	.42 (.07) **	.24	.42 (.07) ***
(Adjusted for disclosure)	.10	.18 (.10)	.09	.18 (.10) ***
Slope effect	.27	-1.68 (.31) ***	.22	-1.68 (.31)
(Adjusted for disclosure)	.03	-.18 (.52)	.02	-.18 (.52)
Time on schoolwork				
Longitudinal intercept effect	.11	.81 (.37) *	.06	.81 (.37) *
(Adjusted for disclosure)	-.07	-.52 (.58)	-.04	-.52 (.58)
Slope effect	.01	.48 (1.78)	.02	.48 (1.78)
(Adjusted for disclosure)	-.12	-3.44 (2.61)	-.05	-3.44 (2.61)
Self-regulated learning strategies				
Longitudinal intercept effect	.24	.28 (.05) ***	.24	.28 (.05) ***
(Adjusted for disclosure)	-.05	-.06 (.07)	-.05	-.06 (.07)
Slope effect	.35	-1.52 (.22) ***	.29	-1.52 (.22) ***
(Adjusted for disclosure)	.16	.73 (.49)	.14	.73 (.49)
Autonomous motivation				
Longitudinal intercept effect	.02	.17 (.23)	.22	-1.26 (.30) ***
(Adjusted for disclosure)	.07	.23 (.23)	.05	.23 (.23)
Slope effect	.18	-2.64 (.91) **	.15	-2.64 (.91) **
(Adjusted for disclosure)	.12	-1.54 (1.11)	.08	-1.54 (1.11)
Achievement				
Longitudinal intercept effect	.09	.10 (.03) ***	.07	.10 (.03) ***
(Adjusted for disclosure)	.06	.07 (.05)	.05	.07 (.05)
Slope effect	.08	.38 (.15) *	.06	.38 (.15) *
(Adjusted for disclosure)	-.02	-.08 (.32)	-.01	-.08 (.32)

Note. Unstd. = Unstandardized estimates; Std. = Standardized estimates.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.

Table 4
The Moderating Role of Socialization Context in the Effects of Adolescents' Disclosure on Autonomous Motivation Over Time

Effect	Socialization Context					
	Parent-Child Relationship Quality			Parent Autonomy Support		
	β	B (SE)	β	B (SE)	β	B (SE)
Step 1						
Country (-1 = US; 1 = China)						
Multiple-imputation data set		.56 (.12) ***		.44 (.10) ***		.38 (.10) ***
Original data set	.18	.52 (.12) ***	.14	.41 (.11) ***	.12	.36 (.10) ***
Autonomous motivation (Wave 1)						
Multiple-imputation data set		.49 (.04) ***		.49 (.04) ***		.50 (.04) ***
Original data set	.48	.50 (.04) ***	.48	.50 (.04) ***	.49	.50 (.04) ***
Step 2						
Disclosure (Wave 1)						
Multiple-imputation data set		.07 (.15)		.21 (.12)		.28 (.12) **
Original data set	.03	.11 (.15)	.07	.24 (.13)	.09	.32 (.12) **
Context (Wave 1)						
Multiple-imputation data set		.40 (.16) *		.24 (.14) ^		-.07 (.13)
Original data set	.11	.42 (.17) *	.08	.27 (.14) ^	-.03	-.10 (.11)
Step 3						
Disclosure x Country						
Multiple-imputation data set		.22 (.14)		.26 (.12) *		.23 (.11) ^
Original data set	.06	.19 (.15)	.08	.26 (.12) *	.06	.22 (.11) ^
Context x Country						
Multiple-imputation data set		.07 (.17)		-.00 (.15)		-.17 (.13) *
Original data set	.04	.15 (.17)	-.00	-.01 (.14)	-.07	-.25 (.11) *
Disclosure x Context						
Multiple-imputation data set		.27 (.14) **		.31 (.13) **		-.09 (.13)
Original data set	.09	.37 (.13) **	.11	.41 (.12) **	-.05	-.18 (.12)

Effect	Socialization Context					
	Parent-Child Relationship Quality			Parent Autonomy Support		
	β	B (SE)		β	B (SE)	
Step 4						
Disclosure x Context x Country						
Multiple-imputation data set		-.38 (.14)**			-.28 (.13)*	.27 (.13)*
Original data set	-.10	-.35 (.13)**		-.09	-.29 (.12)*	.30 (.12)*

Note. Adolescents' autonomous motivation was predicted at Wave 4.

^a $p = .05$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.