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Relating Psychological and Social Factors to Academic Performance: A Longitudinal Investigation of High-Poverty Middle School Students

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Abstract

We investigated the relations between middle school students' psychological factors (academic commitment and emotional control), social perceptions (family involvement and school climate), and academic performance over time. Based on a two-year longitudinal data set of 942 middle-school students from a high-poverty district in the United States, we found that all four factors measured in 6th grade were predictive of GPA at the end of the 7th grade above and beyond gender, race, and home intellectual materials. Among these factors, emotional control had the strongest relation with GPA, and the importance of family involvement increased over time, especially for females. The results also showed indirect effects of the social factors on GPA through the psychological factors, and mostly through emotional control. These findings highlight the complex relation between social-motivational processes and academic outcomes in early adolescence.

Keywords: psychological factors, social factors, academic performance, adolescence, poverty

Relating Psychological and Social Factors to Academic Performance: A Longitudinal Investigation of High-Poverty Middle School Students

Academic performance in middle school has been shown to be strongly related to high school performance and later college readiness and career success (e.g., ACT, 2008; Allensworth, Gwynne, Moore & Torre, 2014). Moreover, recent studies have shown that students from low socioeconomic status (SES) backgrounds not only have lower academic performance than their more advantaged peers, but also a chronic risk of lower academic growth during early adolescence (Cutuli et al., 2013; Herbers et al., 2012). Identifying determinants of academic performance for middle school students who come from low-income backgrounds is crucial for the development of interventions and educational practices aimed at reducing the SES-achievement gap.

Prior studies have related psychosocial factors, such as family support and social skills, to lower academic performance in low-income students (e.g. Serbin, Stack, and Kingdon, 2013). Longitudinal studies have examined both contextual factors and individual differences when predicting academic performance (e.g.; Byrnes & Miller, 2007; Reeves, 2012). Most of the research focused on either school (e.g. Abbott-Chapman, 2014) or family (e.g. Serbin, Stack, & Kingdon, 2013) context, but not both. Also, most studies only examined the direct effects of contextual factors or students' individual differences; fewer studies have examined how *both* contextual and individual factors relate to academic performance (Li, Lerner, & Lerner, 2010). To help fill this void, the present study examined the relations between two psychological factors (academic commitment and emotional control) and two social perceptions (family involvement and school climate) with academic performance over time in a sample of low-income middle school students, with additional tests on the differential relations by gender.

Social-emotional process and academic outcomes in early adolescence

Research has found that middle school students experience marked declines in intrinsic interest and school grades (see Eccles et al., 1984, for a review). To prevent the decline in middle school students' academic performance, school and family environments where adolescents feel safe, supported, and in control have been suggested as key ingredients (Hill & Tyson, 2009; Henrich, Schwab-Stone, Fanti, Jones, & Ruchkin, 2004). Family involvement in education has been suggested to be one of the important factors influencing children's academic performance (Fan & Chen, 2001; also see Hill & Tyson, 2009, for a review). However, studies on the impacts of parental involvement during adolescence have shown mixed findings. In a review, Eccles and Harold (1996) reported that parental involvement decreases as children move into secondary school, as parents believe they have more influence when their children are in elementary school. Other research suggests that family involvement may particularly help students with disadvantaged backgrounds during the transition from elementary to middle school (Gutman & Midgley, 2000). Some recent findings using the 4-H Study of Positive Youth Development longitudinal dataset indicated that parental involvement was linked to positive outcomes during

adolescence such as academic competence (e.g., Li, Lerner, Lerner, 2010) and self-regulation (e.g., Bowers et al., 2011). Another notable longitudinal study revealed that family involvement was associated with increases in school grades among African American and white students (Wang, Hill & Hofkens, 2014).

Other studies have examined the relation between school climate and adolescents' health and behavior outcomes (e.g., Catalano et al., 2004; LaRusso, Romer, Selman, 2008; Mayberry, Espelage, & Koenig, 2009; Goldstein, Young & Boyd, 2008). Studies found that school climate predicted middle school students' achievement (Ma & Wilkins, 2002; Papanastasiou, 2002), and that perceived school climate helps explain the SES-achievement gap (Chen & Weikart, 2008). Positive perceptions of the school environment may be particularly important for adolescents from low-SES backgrounds because they may not have an optimal physical environment at home to support their development, and they may face more challenges than their more advantaged peers.

To explain how social environment influences adolescents' development and academic performance, Bandura's (1986) Social Cognitive Theory specified that environmental forces could influence actions through cognitive and emotional systems. With a post-behavioristic perspective that humans are more than the environmental stimuli to which they have been exposed, the theory also emphasizes that individuals are active agents and are able to generate influences to maintain their own motivation or efficacy. This self-generated influence can be partly reflected in goal-directed activities or self-regulatory behaviors, such as academic commitment and emotional control. Academic commitment represents students' willingness to achieve in school and to obtain a diploma. Emotional control represents students' tendency to manage negative feelings and to find appropriate outlets for expression. There is considerable evidence linking academic commitment and emotional control with academic outcomes (e.g. Robbins et al., 2006; Fredricks, Blumenfeld, & Paris, 2004; Cooper, Lindsay, Nye, & Greathouse, 1998). In a recent longitudinal study of 4,660 middle school students, Casillas et al. (2012) reported that the correlation between academic commitment measured in middle school and early high school grades was .34, and the correlation between emotional control and high school grades was .26.

Investigating the link between students' perception of social factors, their internal self-regulation system, and their academic performance is crucial for understanding the sophisticated internal and external dynamics that determine adolescents' outcomes (Skinner, Furrer, Marchand, and Kindermann, 2008). Studies have suggested that social factors can influence students' academic commitment and emotional regulation (Furrer & Skinner, 2003; Brody & Ge, 2001, Whitlock, 2006, Englund et al. 2004). For example, Bowers et al. (2011) found that perceived positive parent-child relationships and high level of parental involvement in school support the development of self-regulation. They further suggested that contextual changes affect adolescents' development, but each individual has different self-regulation strategies to manage these changes; and in return, these changes affect subsequent development of self-regulation. In a study of young children, Evans and Rosebaum (2008) found that self-regulation

mediated the effect of income on cognitive development. However, most research on low-income students has focused on social factors and placed less emphasis on the possible mediating role of individual psychological factors for explaining academic performance. According to Social Cognitive Theory, it is likely that social factors have indirect effects on low-income adolescents' academic achievement through psychological factors.

Gender differences in academic performance have been documented with males performing worse than females in most subjects during middle school (e.g., Buchmann, DiPrete, & McDaniel, 2008). Some research suggests that the gender difference in academic performance is more evident in low-income students (Entwisle, Alexander, & Olson, 2007). Also, previous research suggests that the effects of environmental factors on adolescents' academic outcomes vary by gender. For example, Rueger, Malecki, and Demaray (2010) found that parental support was important for both males and females when predicting GPA, but the effect was stronger for females. Another study found that females outperformed males at the end of elementary school and at the beginning of the middle school, and this gender gap was mediated by parental support, social skills, and spelling skills (Sebin, Stack, and Kingdon, 2013). Eschenbeck et al. (2007) proposed that females may value intimate relationships more than males, and are more likely to use social support as a coping strategy.

The Present Study

Prior studies suggest that both psychological and social factors influence adolescents' academic performance. However, only a few studies considered the unique contribution of these factors or tested their influences on students' current and later outcomes. Moreover, fewer such studies have focused on low-income middle students' academic performance. This limits our ability to understand some important issues, such as whether the importance of the social and psychological factors changes over time, and which factor has the strongest relation with low-income middle schoolers' academic performance.

Recognizing these research gaps, we obtained measures of both middle school students' psychological factors (academic commitment and emotional control) and social perceptions (family involvement and school climate) and tracked their grades over two years. Low-income students are of specific interest because they are at the greatest risk of early dropout (Chapman et al, 2011) or completing high school ill-prepared for college and work (ACT, 2015). The current study examined two primary research questions: First, to what extent are the psychological factors (academic commitment and emotional control) and social factors (family involvement and school climate) related to students' concurrent and later academic performance? In addition, does the importance of social or psychological factors change over time? Second, do the social factors have indirect effects on later academic performance through the psychological factors? For both research questions, we also examined if there are gender differences in these effects.

We hypothesized that academic commitment, emotional control, family involvement, and school climate would all predict students' current and later academic performance. In addition, we hypothesized that these effects would be stronger for females than for males. Further, based

on Social Cognitive Theory, we hypothesized that the social factors have positive indirect effects on later academic performance through the psychological factors.

Method

Sample and Procedure

The sample included 942 middle-school students at ten middle schools from a large city in the Midwestern United States. The schools are located in a low-income district, with 94% of students in the district eligible for free or reduced lunch and 84% of students belonging to racial/ethnic minority groups. In our sample, 54% of the students are Hispanic, 16% African American, 10% white, 4% Native American, 2% Asian, and 11% are two or more races; the sample was evenly split on gender (49% male). ACT Engage Grades 6-9 (ACT, 2014) is an assessment of psychosocial factors that was administered during school, and takes about 30 minutes to complete. All students in this sample took Engage in 6th grade, and have four semesters of follow-up records of school grades provided by the district.

Measures

Academic performance. Students' school grade point averages (GPAs) from the fall semester of Grade 6 to the spring semester of Grade 7 were provided by the district on the 0.0 - 4.0 scale typically used by schools in the United States.

Home intellectual materials. Research focused on the physical environment suggests that a lack of intellectual materials (e.g., books) at home is one cause of the SES-achievement gap (Guo & Harris, 2000; Linver, Brooks-Gunn, & Kohen, 2002). As part of the Engage assessment, students were asked about resources that are available in their home including newspapers, magazines, a dictionary, a computer, a room to study, and having more than 100 books. Students respond on a 0 (No) or 1 (Yes) scale for each item. The sum of the six items was used as a measure of the amount of intellectual materials at home and was used as a covariate in the statistical models.

Psychological factors. Students' academic commitment and emotional control were measured by the "Commitment" and "Managing Feelings" scales of the Engage assessment, respectively. The Commitment scale measures students' "commitment to stay in school and obtain a high school diploma", and it is composed of 10 items ($\alpha=.88$); a sample item is "I am committed to graduating from high school". The Managing Feelings scale measures students' "tendency to manage duration and intensity of negative feelings (e.g., anger, sadness, embarrassment) and to find appropriate ways to express feelings". This scale is composed of 12 items ($\alpha=.88$); a sample item is "I would walk away if someone wanted to fight me". Both scales use a 6-point Likert-type scale ranging from 1 (Disagree a Lot) to 6 (Agree a Lot). The scales were scored using the simple sum of the item scores. The Commitment scores can then range from 10-60 and the Managing Feelings scores can range from 12-72. A linear transformation was then used to map the Managing Feelings scores to the 10-60 range.

Social factors. Family involvement and school climate were measured by the "Family Involvement" and "School Safety Climate" scales of the Engage assessment, respectively. The Family Involvement scale measures "family involvement in a student's school life and

activities”, and it is composed of 9 items ($\alpha=.83$); a sample item is “My family tries hard to be involved in my school life”. The School Safety Climate scale measures “school qualities related to students’ perception of security at school”, and it is composed of 11 items ($\alpha=.78$); a sample item is “I feel safe at school.” Both measures use the 6-point Likert-type scale ranging from 1 (Disagree a Lot) to 6 (Agree a Lot). The scoring method was the same as that of the psychological factors.

Statistical analyses method

For the first research question, we examined whether the academic commitment, emotional control, family involvement, and school climate scores (measured in 6th grade) explained variance of GPA and changes in GPAs above and beyond gender, race, and intellectual materials at home. The semester GPA data from 6th to 7th grade were analyzed using multilevel modeling with PROC MIXED (SAS, 2004). Time was coded as (-3, -2, -1, 0) for 1st semester in grade 6, 2nd semester in grade 6, 1st semester in grade 7, and 2nd semester in grade 7, respectively. Using this coding system and an intercept-slope model for grades, the intercept coefficient represents a student’s expected grade for the 2nd semester of grade 7. A positive effect on intercept indicates that the predictor is positively related to GPA at the end of grade 7, and a positive effect on slope indicates that the predictor is increasingly important across grades (Li & Geary, 2013). To account for the hierarchical structure of the data, random coefficients of intercept and slope (time coefficient) were added for schools and students. Female was used as the reference group for gender and white was used as the reference group for race. In addition, to account for non-linear GPA trends, a quadratic effect for time with random coefficients for schools and students was included. To investigate the gender differences, we fit additional models with males and females separately.

For the second research question, multiple mediation models were used to test if the psychological factors mediated the relation between social factors and grades in the 2nd semester of grade 7 (Preacher & Hayes, 2008), using gender, race, and intellectual materials at home as covariates. To test for indirect effects of the social factors, the bias-corrected bootstrap resample method was implemented (Preacher & Hayes, 2004). In all models, all predictors (except for the gender and race indicators) were standardized to ease interpretation of results. We also fit the models with males and females separately to explore any potential gender differences in the indirect effects.

Results

Preliminary data analysis

Means, standard deviations, and correlations are reported in Table 1. Mean GPA trajectories of the overall sample, the female sample, and the male sample are plotted in Figure 1. From the correlations, we see significant gender differences in psychological factors, social factors, and GPA across four semesters. The negative coefficients indicate that females scored higher on all these factors. Compared to white students, African American students scored significantly higher on commitment, family involvement, and school climate, but scored lower on emotional control. Hispanic students scored higher than white students on school climate and

had higher GPAs for the first three semesters, but this advantage became smaller in the 7th grade than in the 6th grade. The psychological and social factors were moderately inter-correlated ($r_s=.17-.48$). GPAs remained highly correlated over time ($r_s=.61-.78$), with higher correlations for closer time points. The measure of intellectual materials at home was positively associated with commitment ($r=.18$), family involvement ($r=.22$), and GPAs ($r_s=.09-.17$). Psychological factors and social factors were moderately related to GPAs ($r_s=.08-.29$), with the average correlation of emotional control being the strongest, and school climate the weakest.

Psychological factors, social factors, and academic performance

Preliminary data analysis showed that none of the predictors (psychological factors, social factors, covariates) explained variation in the quadratic coefficients. In other words, none of the interactions with time² were significant. To keep the model parsimonious, we only included the main quadratic effect of time on academic performance (time²) in the models.

We first fit hierarchical models using psychological and social factors to predict academic performance individually, with gender, race, and home intellectual materials as covariates (AICs=5705~5918). Females had higher 2nd semester GPA in grade 7 than males ($\beta_s=-.19\sim-.24$, $p_s=.0013\sim.0035$). African American and Hispanic students did not perform significantly different than white students, but students of other race performed better than white students ($\beta=.19$, $p=.0318$). For all four predictors of interest, their effects on GPA intercept were significant ($\beta_s=.10\sim.22$, $p_s<.0001$), with emotional control having the largest estimate. This indicates that when tested individually, all psychological and social factors explained additional variance in 2nd semester GPA in grade 7 above and beyond the covariates. The slope effects tested whether the effects of the predictors on GPA changed over time. Of the four predictors of interest, only family involvement had a significant slope effect ($\beta=.02$, $p=.0076$). The positive estimate indicated that the importance of family involvement increased over time. The slope estimates of the other three predictors were not significant, indicating little change in their relations with GPAs over time. In addition, the significant slope effect of gender and Hispanic indicate that the gender gap and the difference between Hispanic and white students in GPA became smaller at later time points ($\beta_s=-.04$, $p_s=.0031\sim.0079$; $\beta_s=-.07\sim-.08$, $p_s=.0007\sim.0021$). In other words, the gender and race gaps decreased over time.

Model 1 shown in Table 2 included main effects for the four predictors of interest (effects of predictors on GPA intercept) and their interactions with time (effects of predictors on GPA slope) simultaneously (AIC=5721). Gender and intellectual materials at home were significant predictors of GPA intercept, $\beta=-.18$, $p=.0055$ and $\beta=.05$, $p=.0274$, respectively, indicating females and students who had more intellectual materials at home earned higher GPA than males and students who had fewer intellectual materials. Notably, emotional control and family involvement explained 2nd semester GPA in grade 7 above and beyond other predictors, $\beta=.18$, $p<.0001$ and $\beta=.07$, $p=.0098$, respectively. The significant slope effect of gender (being male) indicates that the gender gap in academic performance was larger at earlier time points than at later time points ($\beta=.04$, $p=.0054$). Importantly, the slope effect of family involvement remained significant, indicating that family involvement was a stronger predictor of GPA at later time

points ($\beta=.02, p=.0190$). Compared to the model with only covariates, 2% of additional variance was explained by the emotional control terms, 1% by the family engagement terms, and close to 0% for the other two predictors¹. These effect sizes are small according to Cohen's criteria (1988).

Gender differences

To explore the gender differences, we fit models for females and males separately, with all the same predictors and covariates described previously. Model 2 (Table 2) shows the results for females (AIC=2830); model 3 shows the results for males (AIC=2980). Intellectual materials at home had a positive effect on intercept for females ($\beta=.10, p=.0017$) while the effect was not significant for males. For both males and females, there was a significant effect of emotional control on intercept, $\beta=.16, p<.0001$ and $\beta=.19, p<.0001$, respectively. Students who scored high on emotional control at the beginning of 6th grade earned higher GPA at the end of 7th grade. Only in the model for females, the slope effect of family involvement was significant ($\beta=.03, p=.0075$), suggesting that family involvement was increasingly important for females over time, but not for males. In addition, there was a significant effect of race (being Hispanic) on slope for males ($\beta=-.12, p=.0003$), but not for females, indicating that the GPA difference between Hispanic and white students appeared only in males.

Analyses of Indirect Effects

We conducted separate mediation tests for family involvement (Figure 2) and school climate (Figure 3). The mediation tests were done for the overall sample, the female sample, and the male sample, and included the same covariates discussed earlier. In Figure 2, the top section shows that the relation between family involvement and 4th semester GPA was significant for the overall, female, and male samples ($ps<.0022$). The bottom section tests whether the relation between family involvement and 4th semester GPA was mediated by the psychological factors (academic commitment and emotional control). The "a" paths show that family involvement predicted academic commitment and emotional control in all three models ($ps<.0001$). The "b" paths revealed a significant path between emotional control and 4th semester GPA ($ps<.0061$), but not for academic commitment. Importantly, with control of academic commitment and emotional control, the path estimates between family involvement and 4th semester GPA were largely reduced in all three models ($ps<.1709$) and was only significant for the overall sample.

For the overall sample, the bias-corrected bootstrap results indicated that the indirect effect of family involvement on GPA was significant ($p<.0001, 95\%$ confidence interval=.04-.11); the effect was significant for emotional control ($p<.0001, CI=.03-.09$), but not for academic commitment ($p=.2150, CI=-.01-.04$). For the male and female samples, the indirect effects estimates were similar: the total indirect effect of family involvement was significant ($ps<.0203, 95\%$ CIs=.01-.11); the effects were significant for emotional control ($ps<.0027, CIs=.01-.12$), but not for academic commitment ($ps<.5029, CIs=-.02-.06$).

Figure 3 shows the same mediation models using school climate instead of family involvement. Again, the top section confirmed the significant relation between school climate

¹ Calculated using the method introduced by Selya, Rose, Dierker, Hedeker, & Mermelstein (2012).

and 4th semester GPA ($p < .0422$). The bottom section reveals significant paths between school climate and the two psychological factors in all three models ($p < .0017$). The paths between emotional control and 4th semester GPA were significant ($p < .0045$), and the estimates were smaller for academic commitment ($p = .0283 \sim .1850$). With control of academic commitment and emotional control, the direct relations between school climate and 4th semester GPA were not significant.

For the overall sample, the bias-corrected bootstrap results indicated that the indirect relation between school climate and GPA was significant overall (one-tailed $p < .0001$, 95% confidence interval = .05-.11); the effect was significant for emotional control ($p < .0001$, CI = .04-.10) and academic commitment ($p = .0366$, CI = .00²-.02). For the female and male samples, the indirect effect estimates were similar: the total indirect effect of school climate on GPA was significant ($p < .0027$, 95% CIs = .02-.13); and the individual effect for emotional control was significant ($p < .0038$, CIs = .02-.10), but not for academic commitment ($p < .2301$, CI = .00³-.03).

Discussion

Using a sample of high-poverty middle school students, we examined whether psychological and social factors were related to academic performance over time, as well as the indirect effects of social factors on academic performance through psychological factors. Results showed that both psychological factors (academic commitment and emotional control) and both social factors (family involvement and school climate) measured in 6th grade were significantly predictive of GPA at the end of 7th grade when they were tested separately. These results replicated findings in previous research. The model with all predictors indicated that emotional control had the most unique contribution to explaining GPA. Notably, the importance of family involvement increased over time for females, but not males. We found significant indirect effects of social factors on 4th semester GPA through the psychological factors, and these effects were mostly similar for males and females. Together, these results extend existing literature on social and psychological factors that predict middle school academic performance and shed light on the mechanism by which social factors influence low-income middle school students' academic outcomes.

The increasing importance of family involvement in predicting academic performance over time has been documented by previous research on adolescents (Wang, Hill, & Hofkens, 2014). Low-income students may be more likely to lack intellectual materials at home and are also influenced by the home environment where there are higher levels of parental mental stress and less guidance in education and career (see Conger & Donnellan, 2007, for a review). Middle school is typically more academically demanding than elementary school, and this could be one of the reasons that family involvement in school gains importance in adolescence.

As shown in previous studies (e.g. Wang, Hill, & Hofkens, 2014), our study found that females had higher academic performance than males in middle school. Furthermore, we found that there were gender differences in the factors predicting students' academic performance.

² This estimate is larger than 0.

³ This estimate is less than 0.

While emotional control predicted GPA for both females and males, intellectual materials at home was a significant predictor of GPA only for females, and family involvement was increasingly important in predicting females' GPAs over time. Gender differences in the importance of family involvement have been addressed in previous studies. Some research suggests that the parent-child relationship may be more important for females than for males (Geuzaine, Debry, & Liesens, 2000, Linver & Silverberg, 1997). However, there is also research suggesting that family closeness is more important for school achievement among males than females (Moon & Ando, 2009). In some other studies on the effect of family involvement on adolescents' outcomes, researchers did not find gender differences when predicting aggression behaviors (Fries, Grogan-Kaylor, Bares, Han & Delva, 2013) and achievement (Plunkett, Behnke, Sands & Choidid, 2009). The current research is one of the few studies that investigated gender differences in the psychosocial predictors of low-income students' academic performance over time. The current sample is dominated by Hispanic students, and the observed gender differences may be not the same for students from a different cultural background.

The current study revealed significant indirect effects of social factors on academic performance through psychological factors. The results suggest a mediating role of emotional control on the effects of social factors on low-income students' academic performance. Brody and Ge (2001) found that adolescents' self-regulation mediated the paths from parenting practices to adolescents' alcohol use. The current study suggests that self-regulation could be a key mediator of parental influence on adolescents' GPA as well.

Compared to the studies on family involvement, there is less research on the relation between school climate and adolescents' outcomes. Some research showed that adolescents' perceptions of school climate related to behavior problems (e.g. Gerard & Booth, 2015; Wang & Dishion, 2012). A recent study showed a significant relation between adolescents' positive perceptions of school climate and growth in academic self-regulation over time (Xia, Fosco, & Mark, 2015). The current study revealed that school climate had an indirect effect on academic performance through emotional control. The results from the current study suggest that a safe and supportive school and family environment may be important for shaping adolescents' self-regulation skills, and the development in adolescents' self-regulation skills may further impact their academic performance.

With the current sample of low-income students, social factors have indirect effects on GPA through psychological factors, but mostly through emotional control. Notably, academic commitment represents students' motivation toward schooling, and emotional control indicates students' self-regulation abilities. The Family Stress Model of economic hardship suggests that when economic pressure is high, parents are at increased risk for emotional distress and behavioral problems, and children are thus at risk for suffering increases in symptoms of depression and anxiety (Dearing, McCartney & Taylor, 2001; see also Conger & Donnellan, 2007, for a review). Our results confirm the importance of developing emotional control skills for adolescents from low-income families. With sufficient self-control and emotional resilience, low-income adolescents may cope with stress and perform better academically.

Limitations and Conclusions

Although this study extended our understanding of the relation between social factors, psychological factors, and low-income adolescents' academic performance, it is limited in several ways. First, this research is based on data from a high-poverty district and no data from a comparison group (e.g., samples from average-income or high-income districts) were collected. Thus, we cannot conclude that the observed relations exist to the same degree for students from other SES backgrounds. The study revealed a significant association between academic commitment, emotional control, family involvement, school climate, and academic performance over time, suggesting that these factors may contribute to the SES-achievement gap. Because we lacked varying SES groups or direct measures of SES, our data cannot test this hypothesis directly. Previous research has focused mostly on contextual mediators in the SES-achievement gap (see McLoyd, 1998, for a review); the complex mechanism between SES, social factors, psychological factors, and adolescents' academic outcomes is worthy of further exploration in future studies.

The assessment of social factors in the current study was collected via a self-report assessment. Self-reported family involvement and school climate are more about students' evaluations or self-perceptions than the external environment. Previous research shows that self-perceptions are important factors that influence students' academic performance (e.g., Eccles & Wigfield, 2002; Dweck & Molden, 2005; Marsh, Trautwein, Luedtke, Koeller, & Baumert, 2006). King, Lengua, and Monahan (2013) reported that the child's perspective, but not the mother's perspective, of parenting predicted self-regulation during early adolescence. As adolescents need more autonomy, it is possible that the internalized perceptions, rather than the social factors, directly influence their motivation and self-regulation. The differences in these two measures could be investigated by adding teacher and parental measures in future research. Also, there are different aspects of self-regulation (Pintrich, 2000; Schunk & Zimmerman, 2003) and the current study focused on students' emotional regulation. Adding measures of students' cognitive self-control (e.g., thinking about the consequences before engaging) and actual behavioral self-regulation (e.g., how long the student can resist temptation) can help draw a more comprehensive picture of the dynamics between social context, self-regulation, and academic outcomes. Overall, given that we only used subscales of one instrument and the nature of the correlational study, interpretations on the results of this study should be made with caution and more extensive or alternative measurements need to be used in future studies.

Another limitation is that we measured psychological factors and social factors concurrently. Prior research hypothesized that social factors affect psychological factors, and we used the same order of effects in our hypothesis. However, we cannot rule out the possibility of reciprocal relations between students' psychological factors and social factors. For example, it is possible that low-income adolescents who are low in emotional control are less likely to adjust appropriately to detrimental factors in the environment, and thus perceive the environment more negatively. Future research can collect data on social and psychological factors at multiple time points to better address the causal relation.

The current sample is predominantly Hispanic (54%), and only 10% of the sample is white. We may have detected more differences across racial/ethnic groups with larger samples of white or African American students, and the gender differences observed in the current study may not apply to students from different ethnic backgrounds. The current study focused on examining the overall relation between social factors, psychological factors, and students' academic performance and the gender difference in this relation without other moderation effects (e.g., race) being fully examined. Future research could examine whether the results replicate with a more diverse sample, and whether the results vary by racial-ethnic group. Also, we did not examine what factors contributed to the gender difference in the academic performance. It is possible that some social or emotional factors mediated the gender differences, and additional research focused on explaining the gender gap in academic performance can investigate this question.

To summarize, the present research showed that emotional control and family involvement were predictive of high-poverty middle students' GPA above and beyond gender, race, and home intellectual materials. There were indirect effects of family involvement and school climate on GPA through psychological factors, but mostly through emotional control. These findings suggest that the social factors and low-income middle school students' individual assets both affect academic performance, and highlight the complexity of the relation between the social-emotional process and academic outcomes in early adolescence. The findings suggest the importance of developing and evaluating programs for family engagement and developing emotional control skills in adolescents, and considerations of gender differences in program design.

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