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GENDER DIFFERENCES IN ADOLESCENT DEPRESSION: SOCIAL INTEGRATION INTO THE NORMATIVE CONTEXT OF THE SCHOOL

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Gender Differences in Adolescent Depression: Social Integration into the Normative School Context

ABSTRACT

This study investigates gender differences in adolescent depression associated with different levels of social integration into the normative high school environment. Previous research stresses the importance of social integration for positive mental health outcomes, but assumes girls are more responsive to social networks. If accurate, gender differences in depression will be weaker in situations of good fit and stronger in situations of bad fit because social integration into the school will be more beneficial for girls and social isolation will be more risky. To test this hypothesis, a multilevel model is used to predict CES-D depression scores with data from waves I and II of the National Longitudinal Study of Adolescent Health using fit indexes to assess social integration and cross-level interaction terms (gender * each fit index) to detect gender differences. Results suggest, contrary to expectations, a better fit within the normative context of the school does not appear to be associated with greater decreases in depression for girls. A larger gap actually exists in the depression scores between boys who have GPAs and friendship involvement scores above the averages of the school and boys who have GPAs and friendship involvement scores similar to the school averages.

Gender Differences in Adolescent Depression: Social Integration into the Normative School Context

Social and behavioral research on social integration within the school has focused mainly on academic achievement. But, findings suggest that social integration within the normative school context also has important implications for other adolescent outcomes including mental health (Larson 1983; Resnick et al. 1997; Simmons and Blyth 1987). In general, a sense of belonging in school is associated with better psychological adjustment (Osterman 2000), and student perception of the school climate is associated with fewer depressive symptoms (Roeser, Eccles, and Sameroff 1998). However, evidence also suggests that the association between the level of fit within the normative context of the school and psychological outcomes may not be the same for boys and girls (Cyranowski et al. 2000; Garnefski and Okma 1996; Kuperminc et al. 1997; Nolen-Hoeksema 2001). This variability might contribute to gender differences in depression during adolescence.

This study adds to the literature regarding the social contextual influences of the school on adolescent mental health by determining the extent to which the association between gender and depression is moderated by levels of social integration into the high school context. In doing so, I specifically pinpoint social integration on the institutional level. Utilizing an adolescent specific approach and assuming that boys and girls have different reactions to social integration (conceptualizing social integration as a moderator), I expect that a better fit within the school context will be associated with decreased depression, especially for girls. To test this basic hypothesis, I will use data from Add Health: a study that contains extensive information about the individual characteristics of teens as well as their school contexts. Multilevel modeling will estimate CES-D depression as a function of fit into the normative context of the school, and then

determine whether this link differs by gender. Results will gauge the degree to which differences in adolescent depression are shaped by the larger institutional context, which is useful from a theoretical level to test the assumption of greater female reactivity at the institutional level, and from a practical level to better understand the association between fit within the normative context of the school and depression for girls and boys.

The Normative Context of the School

A strong tradition of studying the association between context and a variety of health-related outcomes exists in the sociological and psychological literatures. The neighborhood is usually considered the most relevant context since adults have been most often chosen for study. However, the school is a more salient environment for the teen (Anderman 2002; Goodman et al. 2003; McNeely, Nonnemaker, and Blum 2002).

The school serves as a very important context for the adolescent (Coleman 1961) for several reasons. First, schools are formal institutional contexts responsible for exercising the necessary control through numerous administrative rules in order to provide instruction (Meyer et al. 1990). But, students also have ample opportunities to interact and socialize with their friends in both academic and recreational activities. The school, therefore, provides the context in which the same- and cross-sex peer relationships that move to center-stage in adolescence tend to take place (Feld 1981; Sullivan 1953). So much social contact is centered on the school context during adolescence (Feld 1981) that the school actually serves as the heart of youth culture (Eder, Evans, and Parker 1995; Kinney 1999; Steinberg, Brown, and Dornbusch 1996).

Students interact with each other, their teachers, and the school administrators within this school context. The nature of these aggregated interactions helps to determine a general atmosphere, or climate, for the school (Crosnoe, Johnson, and Elder 2004). The particular,

overall climate at a school influences what teens consider to be socially acceptable attitudes, expectations, and behaviors (Harris, Duncan, and Boisjoly 2002) and creates an informal normative structure (Crosnoe and Muller 2004) and culture for each school. If students' individual characteristics do not align with the collective norms of the school, they do not fit into the normative context and are less socially integrated at the institutional level. Social integration can thus be conceptualized by how well an adolescent measures-up to what is considered to be normal by the majority at the school.

The degree to which students fit within their normative school environment has important implications for mental health outcomes (e.g. Larson 1983; Simmons and Blyth 1987). Student perceptions of the school climate are associated with depressive symptoms (e.g. Roeser, Eccles, and Sameroff 1998). A perceived sense of belonging is associated with better psychological adjustment (Osterman 2000). And, acceptance by classmates is a major concern for adolescents (Bukowski, Hoza, and Boivin 1993). Greater levels of fit within the high school normative context are therefore expected to be associated with decreased depression.

Yet, this association between the degree of fit within the normative context and psychological outcomes may not necessarily be the same for boys and girls. For example, problems with teachers and negative feelings about school are more important predictors of behavioral problems for boys (Garnefski and Okma 1996). Moreover, some evidence suggests that boys' school climate perceptions have been found to explain both externalizing and internalizing problems, but girls' perceptions only explain externalizing problems (Kuperminc et al. 1997).

REVIEW OF THE LITERATURE

Research on school-level differences during adolescence has often focused on academic achievement and behavioral issues such as truancy and drug use instead of psychological outcomes (Roeser 1998). There is also a dearth of studies looking at psychological outcomes and school enrollment. These few studies, however, have illustrated the importance of fit within the normative context of the school for psychological well being.

Importance of Fit within the Normative Context of the School

A readily apparent indicator of being 'normal' is a teen's appearance. During adolescence, teens enter puberty at different times and mature at different rates. Appearing older than most of the other students at the school has been found to be associated with emotional distress and suicidal thoughts (Resnick at al. 1997). Findings also indicate that the outcomes associated with early maturation can be more severe for girls than boys. Early maturing girls in coeducational school settings have been shown to be at the greatest risk for delinquency (Caspi et al 1993). And, girls who matured earlier experienced more self image problems especially if they transitioned from elementary school to a junior high because of greater social and sexual pressures exerted by older boys in the new school context (Simmons and Blyth 1987).

Appearing older than other students is not the only appearance-related aspect of being normal. American society generally stigmatizes obesity, and the degree to which it is specifically stigmatized varies depending on an individual's primary social context (Crosnoe and Muller 2004; Ross 1994). In schools with higher rates of romantic activity and lower average body size, the academic achievement of obese adolescents has been found to suffer since the normative context is especially likely to stigmatize obesity (Crosnoe and Muller 2004).

Issues of fit within the normative context can also have to do with how an individual student measures up to the prevalent beliefs or attitudes at the school. Increased aggregated school belonging is generally associated with a higher average GPA for the school. But, in schools with greater aggregated measures of belonging, students who feel that they do not belong experience more social rejection, difficulties getting along with other teachers and students, and trouble completing their homework (Anderman 2002). Additionally, in schools with higher aggregated measures of supportive school climate and school connectedness, students with lower connectedness were more physically and relationally aggressive (Wilson 2004).

School Characteristics, Sense of Belonging, and Connectedness

Whereas research detailing the association between how individuals fit into the normative context of the school and psychological outcomes is sparse, more studies are available focused on the importance of a sense of belonging and connection to the school for adolescents. Although this research is tangential to fit within the normative context of the school, studies looking at student perceptions of connectedness to the school are valuable in illustrating that the association between fit and psychological outcomes varies by different schools and suggesting the characteristics of the school that must be controlled in analyses. Generally, smaller schools have been shown to be associated with greater connectedness (Lee and Smith 1995; McNeely, Nonnemaker, and Blum 2002). Suburban schools are associated with a greater sense of belonging when compared to urban schools (Anderman 2002). And, school connectedness is higher in racially segregated schools and lowest in integrated schools (Johnson, Crosnoe, and Elder 2001; McNeely, Nonnemaker, and Blum 2002).

THEORETICAL APPROACH AND HYPOTHOSIS

The general underlying assumption behind many of the studies reviewed is based on the importance of social integration and sense of belonging for *improved* psychological and academic outcomes. Social integration has long been considered a key element of improved individual well-being and mental health outcomes (e.g. Durkheim [1865] 1966). But many studies looking specifically at social integration within the normative school context also rely upon the well-established idea that a sense of belonging is a fundamental psychological need that plays an important role in human motivation without going much further (Baumeister and Leary 1995; Deci et al. 1991). For adolescents in particular, a perceived sense of belonging is associated with better psychological adjustment, improved academic engagement, and higher achievement (Osterman 2000). The key theoretical question, then, is why? Over time, theories designed to answer this question have been developed.

Most of the studies focused on the alignment of individual characteristics with the school context rely on theoretical approaches drawn from Lewin's (1939) field theory and Bronfenbrenner's (1977) ecology of human development. These goodness of fit models generally hold that a successful developmental outcome depends on how well an individual's needs are supported by the environment (Graber and Brooks-Gunn 1996).

Even more recently, conceptions of goodness of fit have been broadened even more and their applicability has extended past their previous narrow focus to include ideas about how individuals fit into the normative context of their primary environments. These explanations of how the fit between individual characteristics and contextual norms affect functioning utilize the concept of reflected self appraisal and contend that individual self concept is constructed through others' judgments (Cooley [1902] 1983). Successful functioning depends on how well

individual characteristics fit with collective norms of the primary context (Crosnoe and Muller 2004).

Whereas these goodness of fit models provide a solid foundation to understand how individual outcomes are associated with fit within the school context, they do not specifically address gender differences in fit and depression. Different early socialization experiences with parents and teachers are important since girls are generally socialized to be nurturing, to focus on relationships, and to care for others (Gilligan 1982; Marini 1988) whereas boys are encouraged to be instrumental and independent (Gilligan 1982). However, the importance of the interactive context of the peer group also reinforces the meaning of gender (Thorne 1993).

Young boys and girls segregate themselves into same-sex friendship and play groups at an early age. Both groups develop different cultures in which specific male and female styles of interaction are learned. Boys learn to be more physical in their play styles, competitive, and physically aggressive. Girls play in smaller groups, tend to be more cooperative, engage in turn taking play, and express greater self-disclosure to each other (Maccoby 1998; Thorne and Luria 1986). The different styles of interaction learned in each group help further socialize boys to be more independent while girls learn the importance of maintaining relationships. The different interaction styles learned in the segregated friendship groups are also associated with how boys and girls assess their self worth with boys gauging their status through feedback and girls assessing their popularity with social comparison (Thorne and Luria 1986; Whiting and Edwards 1988). Thus, social integration can be conceptualized as a moderator with girls being more reactive to social integration since they utilize social evaluations when assessing themselves.

Assuming a greater female reactivity to social integration at the institutional level, social integration within the high school context would be more important for female depression since

girls are socialized to maintain relationships and are more likely to assess their popularity through social comparisons (Giordano 2003; Martin 1996). Therefore, not fitting into the normative environment of the school and not being considered "normal" in the context of the school could expose a girl to more criticism and condemnation of her peers, leading to increased depression. Greater female reactivity has been the traditional assumption. To determine the extent to which the association between gender and depression is moderated by levels of social integration into the high school culture, I put forward this traditional assumption as the main hypothesis.

A better fit within the student's particular high school normative context will be associated with decreased depression, especially for girls.

However, a better fit also indicates improved status with a higher position in the hierarchy of the school for boys. An equally logical prediction, then, could be that a better fit within the school context is more important for boys' depression. This study will determine the validity of the traditional assumption about girls, or whether this assumption masks greater reactivity for boys at the institutional level.

DATA AND METHOD OF ANALYSIS

Data

Data for the analyses in this study are from the National Longitudinal Study of Adolescent Health (Add Health) (Udry 1998). Add Health is nationally representative, consists of 3 waves of data collection, and was designed to study the health-related behaviors of teens in grades 7 through 12 during their development into adulthood. Add Health is one of the best data sets to use when studying contextual influences on adolescent depression. Add Health contains a slightly modified version of the Center for Epidemiologic Studies Depression Scale (CES-D)

asked at multiple points in time, so previous incidence of depression can be controlled. Additionally, so much detailed information is gathered about the respondent's friends, families, schools, and neighborhoods that numerous network variables can be constructed.

Wave I, Stage 1 consisted of 90,118 students in 145 middle, junior high, and high schools completing the self-administered in-school survey. With the exception of students who were absent on the day the surveys were completed, these surveys provided a census of the school. Wave I, Stage 2 consists of a core sample of 12,105 students from the in-school survey. In-home interviews were conducted by trained interviewers and lasted for 1 to 2 hours. They addressed topics such as health status, peer networks, and history of romantic relationships. Additional information on topics such as neighborhood characteristics, household characteristics, and income was also collected from questionnaires sent home and completed by a parent. Finally, school administrators provided information regarding characteristics of the school and student body, curriculum, and school services. The Wave II follow up (N = 14,738) was conducted in April through September 1996 and elicited responses mainly from Wave I respondents who were not yet seniors (Harris et al. 2003).

Measures

The dependent variable is a 19 question version of the CES-D included in the Add Health reported in Wave II. Respondents were asked how often during the last week (0=never or rarely to 3=most of the time or all of the time) they had feelings, thoughts, and physical conditions that indicate depression. The Add Health adaptation of the original 20 question CES-D omits two questions concerning crying spells and restless sleep, rewords two questions dealing with feeling like everything is an effort and not being able to get going, and adds a question concerning if life is worth living (Perreira et al. 2005). Values on the new index range from 0 to 57 with higher

values indicating increased levels of depression. The alpha coefficient of the index is .87. Appendix 1 contains the complete list of questions (available upon request).

[Table 1 About Here]

Numerous variables from Wave I are included in the analyses in order to control for their effects. Table 1 lists the appropriate descriptive statistics for the full sample and then separately for boys and girls. Demographic variables such as sex (1 = female, 0 = male) and age (in years) are considered. Race and ethnicity are measured with dichotomous variables indicating white, African American, Asian, Hispanic, and 'other' race. Student GPA is measured by averaging grades in English, math, history and science. Self rated general health measured from 1 = poor to 5 = excellent and physical development compared to others (with 1 = I look younger than most to 5 = I look older than most) are included as are dichotomous variables indicating if teens believe themselves to be underweight, overweight, or just the right weight. Family context variables account for the type of family in which the respondent lives (two-parent biological, step family, single family, or other family type), and the level of education for the most highly educated parent. Past symptoms of depression are controlled for with the respondent's CES-D score from Wave I. Self-esteem is measured with a 6 item version of the Rosenberg esteem scale. Respondents were asked if they have a lot of good qualities, have a lot to be proud of, like themselves just the way they are, feel like they are doing everything just right, feel socially accepted, and feel loved and wanted. The questions were answered with strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree. Responses were coded so that strongly agree = 5, agree = 4, etc. then summed to create an index ranging from 6 to 30, with higher scores indicating higher self esteem. The alpha of the index is .85.

In order to assess the association between fit into the normative school context and adolescent depression, both individual and school level (macro) measures are used. Individual level factors include dichotomous variables indicating if respondents play at least one sport and if they participate in at least one non-athletic school association or club. The number of friends nominated on the Wave I survey is utilized as well as a measure of friendship involvement. Level of involvement with friends is first calculated by summing the number of activities a respondent reports engaging in with each friend during the past week (going to their friend's house, meeting after school, spending time on the weekend, and talking on the telephone). The sum of activities is then divided by the number of reported friends to create a measure ranging from 0 to 4 (Cavanagh 2004). These individual level measures are from the in school surveys given to every student at each school.

Individual level factors are aggregated to create school level measures by averaging the responses. School level variables indicate the percentage of students in each racial / ethnic category, the percentage of students who participate in at least one sport, and rates of participation in at least one non-athletic school association or club (Crosnoe, Johnson, and Elder 2004). Additionally, aggregated GPA (the mean GPA of all students attending the school), parent's highest educational attainment, and mean friendship involvement score are calculated separately for each school.

I utilize individual level and aggregated school variables to construct measures indicating how individual students fit into their particular school contexts. In order to assess how individual students match the predominant racial composition of the school, a variable is created to represent the percentage of the student's own race / ethnicity that is represented at each school (see Johnson, Crosnoe, and Elder 2001). For example, if white students are at a school that is

78% white, their values for the percent same race variable will be 78. This measure of composition captures the fit between students and their school environment. Similar variables are also created for the percentage of students at each school with similar athletic participation and extracurricular activities.

Aggregated school level variables that have a mean score and standard deviation (GPA, parent's highest education level, and friendship involvement) are used to form a series of dichotomous measures of fit for each school. In short, students are divided into three groups using the mean and standard deviation: above average, average, and below average. For example, if the average GPA for a school is 2.5 with a standard deviation of 1, any student with a GPA above 3.0 (2.5 + (1 / 2)) has an above average GPA. Similarly, any student with a GPA below 2.0 (2.5 – (1 / 2)) has a below average GPA. And, those students with a GPA between 2.0 and 3.0 will be considered average. Using half a standard deviation above and below the mean effectively divides the students at each school into thirds so the dichotomous variables can be created. When possible, the individual responses reported on the Wave I data are used with the aggregated measures from the in school surveys. But because of data limitations, individual responses about athletic participation, extra curricular activities, and friendship involvement are from the in school data.

Finally, school level variables from the Add Health school information and school administrator data files are included in the analyses to control for their effects. Dichotomous variables indicate if the school is public or private. The number of students on the school roster is used to determine the size of the school. Any school with 600 or less students is coded as small, a school with 601-900 students is considered medium, and a school with more than 900

students is big. Schools are also coded as suburban, urban, or rural. And, dichotomous variables indicate the region of the country that the school is located: Midwest, West, South, or Northeast.

Method of Analysis

The statistical models utilized in this study address the traditional hypothesis: a better fit within the student's particular high school normative context will be associated with decreased depression, especially for girls. Analyzing the association between school context and depression requires a multilevel model since depression is predicted using variables measured at both the student (individual) and school (macro) levels with students nested within schools. Since the sampled students share a common environment of the same school, error terms will be correlated and observations can not be considered statistically independent. Standard errors and test statistics will be biased (downward and upward, respectively) leading to conclusions that relationships between variables exist when they really do not (Allison 1999). To correct for these design effects, Proc Mixed is used in SAS.

Before the final models were run, an unconditional model was fit in order to calculate the intraclass correlation (Singer 1998). Results indicate that 4% of the variance is explained by differences between schools. Next, in order to see whether the main effects of the female variable on depression varies across schools, analyses were performed to test for a random slope. Two models were run in which one approximated a random slope for female and the other did not. Comparing the -2 residual log likelihoods of each model yields 58,790.1 - 58,785.8 = 4.3 / 2 d.f., $p<.05$ indicating that the main effect of female on depression varies significantly across schools in the data. As a result, the female variable will be modeled as having a random slope in all of the analyses in this study.

Separate models containing only the control variables and each specific fit variable were run to test for statistical significance. Then, the corresponding interaction term was added to each respective model in addition to the fit variable. Finally, the full model was fit with all control variables, fit measures, and interaction terms. Because the statistical significance of the fit measures and interaction terms did not differ meaningfully between the individual and final models, only 3 models are presented. The baseline model containing only the control variables is offered first. Then, all fit measures are added in Model 2. Finally, all cross level interaction terms (gender x each fit measure) are added to the third model.

If an interaction term is significant, the slopes for boys and girls are assumed to differ depending on the level of fit within the school context (Singer 1998). Interaction effects are then interpreted by calculation of multiple equations for each regression to produce different predicted depression scores for boys and girls at different levels of student x school fit. First, an adjusted intercept will be derived by multiplying the coefficients for all variables in the equation by the respective variable's mean and then summing all of the values (omitting the effects of the interaction term and the main effects of both variables involved in the interaction). This adjusted intercept will be added to both the low and high effects of the interacting variables (for example, female and GPA above school average) to produce a predicted depression score for boys and girls at both levels of the fit variable.

RESULTS

Descriptive Analysis

The descriptive statistics in Table 1 indicate that most of the means and proportions of the individual level factors are similar for boys and girls. However, higher proportions of boys play at least one sport whereas higher proportions of girls participate in at least one

extracurricular activity. Girls also nominate a greater number of friends and report higher levels of friendship involvement whereas a greater proportion of boys have friendship involvement scores below the average of the school. And, greater proportions of girls have a GPA above the school average or a GPA that it similar to the school average (within 1/2 standard deviation of the school mean) whereas greater proportions of boys have a GPA similar to the school average or a GPA below the school average.

Multivariate Analysis

Table 2 presents the results from the three multilevel models predicting teen depression. Model 1 is a baseline model and only includes control variables. Results from Model 1 generally support previous findings in the literature and indicate that while controlling for the effects of the other variables, females have depression scores that are 1.06 points higher than males, on average. Each additional year of age is associated with a .14 point increase in depression. Asians and Hispanics have higher depression scores when compared to whites. Looking older than other students in the school is associated with a .45 point increase in depression whereas considering oneself to be overweight, reporting greater general health, more self esteem, and a higher GPA are associated with decreased depression scores. Respondents who nominate greater numbers of friends have lower depression scores considering that each friend nominated is associated with a .11 point decrease in depression. But, for every point that the friendship involvement index increases, depression scores increase by .33 points. Family and school level controls indicate that living in a single family is associated with an increase of .47 points in depression compared to respondents living with 2 person biological families. And, increased parental education is associated with decreases in depression. Finally, students in small schools average a .50 point increase in depression scores when compared to students in medium sized

schools. This result is unusual considering that since smaller schools have been found to be associated with greater student connectedness (Lee and Smith 1995; McNeely, Nonnemaker, and Blum 2002), students in smaller schools would be predicted to have lower depression.

[Table 2 About Here]

Model 2 includes the measures of fit. Controlling for the effects of the other variables in the model, students with a GPA above the school average have depression scores that are .44 points higher than other students at their school with a GPA similar to the school average. Students with a GPA below the average GPA at the school have depression scores that are .67 points lower than students at their school with a GPA similar to the school average. A greater percentage of students in the school with the same athletic status as the respondent increases depression scores by .01 points. Respondents with friendship involvement below the average level of friendship involvement at the school have depression scores that are .71 points higher than students at their school with friendship involvement similar to the school average. The other measures of fit addressing similarities in race, parent's education, and extracurricular activities are not statistically significant.

The final model, Model 3, includes cross level interaction terms for all of the fit measures. Interaction terms are statistically significant only for female x GPA above the average GPA of the school and female x friendship involvement above average friendship involvement at the school. To more clearly interpret these interaction effects, I calculate predicted depression scores with multiple equations using Model 3 for boys and girls to observe differences in depression. Using the procedure discussed above, boys with a GPA similar to the school average have a predicted depression score of 10.4 whereas boys with a GPA above school average have a depression score of 11.2. Girls with a GPA similar to the average GPA of the school have a

predicted depression score of 10.9 and girls with a GPA above the school average have a slightly higher depression score of 11.1. These results are graphed in Figure 1 and illustrate that whereas both boys and girls with GPAs above the mean GPA of the school have greater depression scores when compared to boys and girls with GPAs similar to the school average, the difference is larger for boys. Given that the value for the GPA above the school average fit variable is positive whereas the interaction term (GPA above the school average x female) is negative, girls' depression is essentially not associated with having a GPA above the school average GPA.

[Figure 1 About Here]

Boys and girls with friendship involvement similar to the school average have predicted depression scores of 10.6 and 11.1, respectively. Friendship involvement above the average friendship involvement of the school is associated with a predicted depression score of 9.9 for boys and 11.3 for girls. These results are illustrated in Figure 2 and indicate that whereas girls' depression is higher overall, boys with friendship involvement greater than the school average have lower depression than boys with friendship involvement similar to the school average. Having a friendship involvement score greater than the school average is associated with greater decreases in depression for boys. Considering that the value of the friendship involvement above the school average fit variable is negative whereas the interaction term (friendship involvement above the school average x female) is positive, girls' depression is not really associated with having friendship involvement greater than the school average. This is also supported by the finding that depression for girls increases by only 0.2 points.

[Figure 2 About Here]

DISCUSSION

Contrary to expectations, a better fit within the normative context of the school does not appear to be associated with greater decreases in depression for girls. A larger gap actually exists in the depression scores between boys who have GPAs and friendship involvement scores above the averages of the school and boys who have GPAs and friendship involvement scores similar to the school averages. Therefore, the main hypothesis is not supported. The traditional assumption of greater female vulnerability to a lack of integration appears to mask greater reactivity for boys at the institutional level.

An explanation of why boys seem to have greater reactivity to social integration at the institutional level is now needed. The theoretical explanation developed earlier points to the importance of status. In short, increased social integration and dominance in the hierarchy signifies higher rank and greater social worth through status for boys. As a boy's status increases, his depression can be predicted to decrease. The institutional level can be particularly relevant for boys since researchers have proposed that the male quest for status in the hierarchy orients boys to social integration into larger contexts (Baumeister and Sommer 1997). Whereas girls focus more on connections with smaller groups of others, the relevant larger context for boys could very well be the school.

Considering that Table 1 illustrates a greater proportion of boys with GPAs below the average GPA of the school or similar to the school average, a boy with a GPA above the average GPA of the school is less likely to align with the gender-specific collective norms of the school. Earning a GPA that is greater than the average GPA at the school could mean that a boy is considered to be a 'nerd' by his peers, that he is less socially integrated, and that he loses status in the larger hierarchy of the school. Conversely, the interaction term for female x GPA below

school average is not statistically significant even though larger proportions of girls have GPAs above the school average or similar to the school average. This suggests that not measuring up to what is considered normal regarding GPA at the school-level is less of an issue for the depression of girls.

Findings concerning how respondents compare with other students at their school in friendship involvement yield somewhat different conclusions. When measured at the individual level, greater involvement with friends is associated with increases in depression (as seen by the statistically significant coefficient in all three models). But for boys, not fitting into what is considered to be an average level of friendship involvement is actually a benefit since having a friendship involvement level greater than the average friendship involvement of other students at the school is associated with decreased depression. Turning to the theoretical explanation, involvement with friends at levels greater than the average friend involvement at the school could be indicative of higher status for boys. And again, friendship involvement above the average friendship involvement at the school-level does not meaningfully affect the depression levels of girls.

In short, boys like to spend time with their friends, but are less concerned with academic achievement. By relying on the theoretical explanation, the importance of status is highlighted in explaining boy's greater reactivity to social integration at the institutional level. Fitting into what is considered normative for the school has status implications for boys that are not necessarily a concern for girls. This conclusion is consistent with the unique style of interaction learned in the male friendship group. Boys are more likely to separate themselves from adults and form close friendship groups to protect each other from adult regulation (Maccoby 1998,

53). If boys think of the classroom as the domain of adults ruled by adult policies, any boy who earns a higher GPA would not be 'cool' and his status would suffer.

The relevance of the specific school domains in which the students either do or do not fit is also important to consider since only some of the fit variables are significant. The variables that largely have to do with academic and social aspects (fit within average GPA, friend involvement, and athletic status levels) are more important than the other more demographic measures of racial similarity and parental education. An exception is the percentage of other students at the school with the same extracurricular participation rate. Perhaps fit within academic and social aspects of the school is more important for the status of students than how they match the demographic characteristics of the student body.

Theoretical approaches can be greatly informed by considering gender-specific aspects of fit. Whereas fit into the normative context of the primary environment has implications for various outcomes (i.e. Crosnoe and Muller 2004; Eccles et al. 1993), the relevance of the specific context could differ for boys and girls. Boys could be more concerned about the normative context of the larger, institutional-level since they derive social worth through status whereas girls may focus on the more intimate, individual or group-level. Additionally, the meaningfulness of different measures of fit can differ for boys and girls. An important aspect of fit for boys (such as having a normative GPA) may not be important for girls. Theories can offer more robust explanations by accounting for these possible gender differences in relevant contexts and measures of fit.

Limitations

The analyses in this study help to illustrate gender differences in the influence of the normative school context on adolescent mental health. However, important limitations must be

acknowledged. First, because so few of the measures of fit used in this study are statistically significant, the meaningful aspects of fit into the school context become a question. The way in which students view themselves as fitting in or not fitting into their schools could be very different from the measures utilized in these analyses. Further qualitative investigation is needed in this regard. Likewise, the discussion and interpretation of the results are somewhat speculative since only associations between fit and depression can be identified. Deeper qualitative analyses would also help to assess the findings in light of the theoretical explanation.

REFERENCES

Allison, Paul. 1999. *Multiple Regression: A Primer*. Thousand Oaks, CA: Pine Forge Press.

Anderman, Eric. 2002. "School Effects on Psychological Outcomes during Adolescence." *Journal of Educational Psychology*, 94:795-809.

Baumeister, Roy and Mark Leary. 1995. "The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Emotion." *Psychological Bulletin*, 117:497-529.

Baumeister, Roy and Kristin Sommer. 1997. "What Do Men Want? Gender Differences and Two Spheres of Belongingness: Comment on Cross and Madson." *Psychological Bulletin*, 122:38-44.

Bronfenbrenner, Urie. 1977. "Toward an Experimental Ecology of Human Development." *American Psychologist*, 32:513-531.

Bukowski, William, Betsy Hoza, and Michel Boivin. 1993. "Popularity Friendship and Emotional Adjustment during Early Adolescence." *New Directions for Child Development*, 60:23-37.

Caspi, Avshalom, Donald Lynam, Terrie Moffitt, and Phil Silva. 1993. "Unraveling Girls' Delinquency: Biological, Dispositional, and Contextual Contributions to Adolescent Misbehavior." *Developmental Psychology*, 29:19-30.

Cavanagh, Shannon. 2004. "The Sexual Debut of Girls in Early Adolescence: The Intersection of Race, Pubertal Timing, and Friendship Group Dynamics." *Journal of Research on Adolescence*, 14:285-312.

Coleman, James. 1961. *The Adolescent Society: The Social Life of the Teenager and its Impact on Education*. New York: Free Press.

Cooley, Charles. [1902] 1983. *Human Nature and the Social Order*. New Brunswick, NJ: Transaction.

Crosnoe, Robert, Monica Johnson, and Glen Elder. 2004. "Intergenerational Bonding in School: The Behavioral and Contextual Correlates of Student-Teacher Relationships." *Sociology of Education*, 77:60-81.

Crosnoe, Robert, and Chandra Muller. 2004. "Body Mass Index, Academic Achievement, and School Context: Examining the Educational Experiences of Adolescents at Risk of Obesity." *Journal of Health and Social Behavior,* 45: 393-407.

Cyranowski, Jill, Ellen Frank, Elizabeth Young, and Katherine Shear. 2000. "Adolescent Onset of the Gender Difference in Lifetime Rates of Major Depression: A Theoretical Model." *Archives of General Psychiatry*, 57:21-27.

Deci, Edward, Robert Vallerland, Luc Pelletier, and Richard Ryan. 1991. "Motivation and Education: The Self-Determination Perspective." *Educational Psychologist*, 26:325-346.

Durkheim, Emile. [1865] 1966. *Suicide: A Study in Sociology*. Translated by J. Spaulding and G. Simpson. Glencoe, Ill: Free Press.

Eccles, Jacquelynne, Carol Midgley, Allan Wigfield, Christy Buchanan, David Reuman, Constance Flanagan, and Douglas Mac Iver. 1993. "Development During Adolescence: The Impact of Stage Environment Fit on Young Adolescents Experiences in Schools and in Families." *American Psychologist*, 48:90-101.

Eder, Donna, Catherine Evans, and Stephen Parker. 1995. *School Talk: Gender and Adolescent Culture*. New Brunswick, NJ: Rutgers University Press.

Feld, Scott. 1981. "The Focused Organization of Social Ties." *American Journal of Sociology*, 86:1015-1035.

Garnefski, Nadia and Okma, Sjoukje. 1996. "Addiction-Risk and Aggressive / Criminal Behavior in Adolescence: Influence of Family, School and Peers." *Journal of Adolescence*, 19:503-512.

Gilligan, Carol. 1982. *In a Different Voice: Psychological Theory and Women's Development*. Cambridge, MA: Harvard University Press.

Giordano, Peggy. 1983. "Sanctioning the High Status Deviant: An Attributional Analysis." *Social Psychology Quarterly*, 46:329-342.

Giordano, Peggy. 2003. "Relationships in Adolescence." *Annual Review of Sociology*, 29:257-281.

Goodman, Elizabeth, Bin Huang, Terrance Wade, Robert Kahn. 2003. "A Multilevel Analysis of the Relation of Socioeconomic Status to Adolescent Depressive Symptoms: Does School Context Matter?" The Journal of Pediatrics, 143:451-456.

Graber, Julia and Jeanne Brooks-Gunn. 1996. "Transitions and Turning Points: Navigating the Passage from Childhood through Adolescence." *Developmental Psychology*, 32: 768-776.

Harris, Katherine, Greg Duncan, and Johanne Boisjoly. 2002. "Evaluating the Role of 'Nothing to Lose' Attitudes on Risky Behavior in Adolescence." *Social Forces,* 80:1005-1040.

Harris, Kathleen, Francesca Florey, Joyce Tabor, Peter Bearman, Jo Jones, and Richard Udry. 2003. "The National Longitudinal Study of Adolescent Health: Research Design Slide Show." http://www.cpc.unc.edu/projects/addhealth/resdesign (accessed November 7, 2006).

Johnson, Monica, Robert Crosnoe, and Glen Elder. 2001. "Students' Attachment and Academic Engagement: The Role of Ethnicity." *Sociology of Education*, 74:318-340.

Joyner, Kara and J. Richard Udry. 2000. "You Don't Bring Me Anything but Down: Adolescent Romance and Depression." *Journal of Health and Social Behavior*, 41:369-391.

Kinney, David. 1999. "From 'Headbangers' to 'Hippies': Delineating Adolescents' Active Attempts to Form an Alternative Peer Culture." *New Directions for Child and Adolescent Development*, 84:21-35.

Kuperminc, Gabriel, Bonnie Leadbeater, Christine Emmons, and Sidney Blatt. 1997. "Perceived School Climate and Difficulties in the Social Adjustment of Middle School Students." *Applied Developmental Science*, 1:76-88.

Larson, Reed. 1983. "Adolescents' Daily Experience with Family and Friends: Contrasting Opportunity Systems." *Journal of Marriage and Family*, 45:739-750.

Lee, Valerie and Julia Smith. 1995. "Effects of High School Restructuring and Size on Early Gains in Achievement and Engagement." *Sociology of Education*, 68:241-270.

Lewin, Kurt. 1939. "The Field Theory Approach to Adolescence." *American Journal of Sociology*, 44:868-897.

Maccoby, Eleanor. 1998. *The Two Sexes: Growing Up Apart, Coming Together*. Cambridge, MA: Harvard University Press.

Marini, Margaret. 1988. "Sociology of Gender." Pp. 374-393 in *The Future of Sociology*, edited by E. Borgatta and K. Cook. Beverly Hills, CA: Sage.

Martin, Karin. 1996. *Puberty, Sexuality, and the Self: Boys and Girls at Adolescence*. New York: Routledge.

McNeely, Clea, James Nonnemaker, and Robert Blum. 2002. "Promoting Student Connectedness to School: Evidence from the National Longitudinal Study of Adolescent Health." *Journal of School Health*, 72:138-146.

Meyer, John, Richard Scott, David Strang, and Andrew Creighton. 1990. "Bureaucratization Without Centralization: Changes in the Organizational System of U.S. Public Education, 1940-1980." Pp. 450-462 in *The Structure of Schooling*, edited by R. Arum and I. Beattie. Mountain View, CA: Mayfield.

Nolen-Hoeksema, Susan. 2001. "Gender Differences in Depression." *Current Directions in Psychological Science*, 10:173-176.

Osterman, Karen. 2000. "Students' Need for Belonging in the School Community." *Review of Educational Research*, 70: 323-367.

Perrira, Krista, Natalia Deeb-Sossa, Kathleen Harris, and Kenneth Bollen. 2005. "What Are We Measuring? An Evaluation of the CES-D Across Race/Ethnicity and Immigrant Generation." *Social Forces*, 83: 1567-1602.

Resnick, Michael, Peter Bearman, Robert Blum, Karl Bauman, Kathleen Harris, Jo Jones,

Roeser, Robert. 1998. "On Schooling and Mental Health: Introduction to the Special Issue." *Educational Psychologist*, 33:129-133.

Roeser, Robert, Jacquelynne Eccles, and Arnold Sameroff. 1998. "Academic and Emotional Functioning in Early Adolescence: Longitudinal Relations, Patterns, and Prediction by Experience in Middle School." *Development and Psychopathology*, 10:321-352.

Ross, Catherine. 1994. "Overweight and Depression." *Journal of Health and Social Behavior*, 33:63-78.

Simmons, Roberta, and Dale Blyth. 1987. *Moving into Adolescence: The Impact of Pubertal Change and School Context*. Hawthorne, NY: Aldine de Gruyter.

Singer, Judith. 1998. "Using SAS Proc Mixed to Fit Multilevel Models, Hierarchical Models, and Individual Growth Models." *Journal of Educational and Behavioral Statistics*, 24:323-355.

Steinberg, Laurence, Brad Brown, and Sanford Dornbusch. 1996. *Beyond the Classroom: Why School Reform has Failed and What Parents Need to Do*. New York: Simon and Schuster.

Sullivan, Harry. 1953. *The Interpersonal Theory of Psychiatry*. New York: Norton.

Thorne, Barrie. 1993. *Gender Play: Girls and Boys in School*. New Brunswick, NJ: Rutgers University Press.

Thorne, Barrie and Zella Luria. 1986. "Sexuality and Gender in Children's Daily Worlds." *Social Problems*, 33:176-90.

Udry, Richard. 1998. The National Longitudinal Study of Adolescent Health (Add Health), Waves I & II, 1994–1996; Wave III, 2001–2002 [machine-readable data file and documentation]. Chapel Hill, NC: Carolina Population Center, University of North Carolina at Chapel Hill.

Whiting, Beatrice and Carolyn Edwards. 1988. *Children of Different Worlds: The Formation of Social Behavior*. Cambridge, MA: Harvard University Press.

Wilson, Dorian. 2004. "The Interface of School Climate and School Connectedness and Relationships with Aggression and Victimization." *Journal of School Health*, 74:293-299.

Table 1 Descriptive Statistics for Variables Used in Depression and School Context Analyses

		Full Sample		Boys		Girls	
	Min / Max	Mean	(SD)	Mean	(SD)	Mean	(SD)
Personal Characteristics							
Female	0 / 1	.51	(.50)	—	—	—	—
Age (in Years)	11 / 21	15.82	(1.57)	15.91	(1.58)	15.74	(1.57)
Race / Ethnicity							
Non-Hispanic White	0 / 1	.52	(.50)	.52	(.50)	.52	(.50)
Non-Hispanic Black	0 / 1	.21	(.41)	.20	(.40)	.22	(.42)
Non-Hispanic Asian	0 / 1	.07	(.25)	.08	(.26)	.07	(.25)
Hispanic	0 / 1	.17	(.38)	.17	(.38)	.17	(.37)
Other Race	0 / 1	.03	(.16)	.03	(.17)	.03	(.16)
GPA	1 / 4	2.77	(.77)	2.66	(.78)	2.88	(.76)
General Health	1 / 5	3.88	(.91)	3.96	(.89)	3.80	(.92)
Self Esteem	1 / 5	4.11	(.60)	4.19	(.56)	4.03	(.62)
Physical Development							
Looks Younger	0 / 1	.21	(.41)	.22	(.42)	.19	(.40)
Looks about Average	0 / 1	.39	(.49)	.39	(.49)	.39	(.49)
Looks Older	0 / 1	.39	(.49)	.37	(.48)	.41	(.49)
Body Image							
Underweight	0 / 1	.17	(.38)	.22	(.42)	.12	(.32)
Average weight	0 / 1	.52	(.50)	.55	(.50)	.48	(.50)
Overweight	0 / 1	.31	(.46)	.23	(.42)	.40	(.49)
Depression							
Wave 1	0 / 57	11.27	(7.55)	10.29	(6.69)	12.21	(8.17)
Wave 2	0 / 57	11.18	(7.56)	10.25	(6.81)	12.05	(8.12)
Individual-Level Factors							
Athletic Status	0 / 1	.55	(.50)	.63	(.48)	.48	(.50)
Extra-Curricular Status	0 / 1	.56	(.56)	.42	(.49)	.68	(.47)
Number of Friends Nominated	1 / 10	7.64	(2.71)	7.29	(2.84)	7.92	(2.55)
Friendship Involvement	0 / 4	.97	(.77)	.89	(.80)	1.04	(.74)

Table 1 (Cont) Descriptive Statistics for Variables Used in Depression and School Context Analys

		Full Sample		Boys		Girls	
	Min / Max	Mean	(SD)	Mean	(SD)	Mean	(SD)
Family Characteristics							
Household Type							
Biological 2 Person Family	0 / 1	.65	(.48)	.67	(.47)	.64	(.48)
Single Family	0 / 1	.24	(.43)	.24	(.42)	.25	(.43)
Step Family	0 / 1	.05	(.22)	.05	(.22)	.05	(.23)
Other Family	0 / 1	.05	(.22)	.05	(.21)	.05	(.23)
Parent's Highest Education	1 / 5	2.94	(1.25)	2.98	(1.24)	2.90	(1.25)
School-Level Controls							
Midwest	0 / 1	.24	(.43)	.24	(.42)	.24	(.43)
West	0 / 1	.22	(.41)	.22	(.41)	.22	(.41)
South	0 / 1	.39	(.49)	.38	(.49)	.39	(.49)
Northeast	0 / 1	.16	(.36)	.16	(.37)	.15	(.36)
Suburban	0 / 1	.53	(.50)	.54	(.50)	.53	(.50)
Urban	0 / 1	.28	(.45)	.27	(.45)	.29	(.45)
Rural	0 / 1	.19	(.39)	.19	(.39)	.18	(.39)
Big School	0 / 1	.49	(.50)	.50	(.50)	.48	(.50)
Medium School	0 / 1	.22	(.41)	.22	(.41)	.21	(.41)
Small School	0 / 1	.29	(.46)	.28	(.45)	.30	(.46)
Public School	0 / 1	.92	(.27)	.92	(.27)	.92	(.27)
Private School	0 / 1	.08	(.27)	.08	(.27)	.08	(.27)
Measures of Fit							
% Same Race	0 / 95	57.38	(28.99)	57.71	(29.24)	57.08	(28.76)
Parent's Education Above School Avg.	0 / 1	.32	(.47)	.34	(.47)	.30	(.46)
Parent's Ed. Similar to School Avg.	0 / 1	.28	(.45)	.27	(.45)	.28	(.45)
Parent's Ed. Below School Avg.	0 / 1	.40	(.49)	.38	(.49)	.42	(.49)
GPA Above School Average	0 / 1	.34	(.47)	.28	(.45)	.39	(.49)
GPA Similar to School Avg.	0 / 1	.35	(.47)	.36	(.48)	.35	(.48)
GPA Below School Avg.	0 / 1	.31	(.46)	.37	(.48)	.26	(.44)
% Same Athletic Status	5 / 97	54.35	(13.63)	54.10	(13.50)	54.58	(13.75)
% Same Extracurricular Status	14 / 86	52.95	(11.72)	51.87	(11.81)	53.94	(11.55)
Friend Involvement Above School Avg.	0 / 1	.29	(.46)	.26	(.44)	.32	(.47)
Friend Inv. Similar to School Avg.	0 / 1	.37	(.48)	.34	(.47)	.39	(.49)
Friend Inv. Below School Avg.	0 / 1	.34	(.48)	.41	(.49)	.29	(.45)
N=		10,095		4,813		5,282	

Notes: Analyses were conducted with unweighted variables.
Cases missing a Wave I weight were excluded.

Table 4.1 Results from the Multilevel Models Predicting Depression

	Model 1		Model 2		Model 3	
	b	(SE)	b	(SE)	b	(SE)
Individual-Level Controls						
Female (F)	1.06***	(.15)	1.09***	(.15)	.48	(.89)
Age	.14**	(.05)	.13*	(.05)	.14**	(.05)
Non-Hispanic White‡						
Non-Hispanic Black	.23	(.22)	.24	(.24)	.23	(.24)
Non-Hispanic Asian	1.14**	(.37)	1.08**	(.40)	1.13**	(.40)
Hispanic	.56*	(.25)	.54†	(.28)	.56*	(.28)
Other Race	.70†	(.37)	.64	(.44)	.66	(.44)
Looks Older	.45**	(.14)	.45**	(.14)	.46**	(.14)
Looks about Average‡						
Looks Younger	.22	(.18)	.21	(.18)	.21	(.18)
Overweight	-.33*	(.15)	-.35*	(.15)	-.34*	(.15)
Average weight‡						
Underweight	-.21	(.19)	-.21	(.19)	-.21	(.19)
General Health	-.34***	(.08)	-.34***	(.08)	-.34***	(.08)
Self Esteem	-.98***	(.13)	-.99***	(.13)	-1.00***	(.13)
Wave 1 Depression	.51***	(.01)	.51***	(.01)	.51***	(.01)
GPA	-.66***	(.10)	-1.20***	(.21)	-1.18***	(.21)
Individual-Level Factors						
Athletic Status	.07	(.14)	-.03	(.15)	-.02	(.15)
Extra-Curricular Status	-.16	(.14)	-.05	(.15)	-.06	(.15)
Number of Friends Nominated	-.11***	(.03)	-.10***	(.03)	-.10***	(.03)
Friendship Involvement	.33***	(.10)	.72***	(.18)	.75***	(.19)
Family Controls						
Biological 2 Person Family‡						
Single Family	.47**	(.16)	.48**	(.16)	.50**	(.16)
Step Family	.32	(.28)	.34	(.28)	.36	(.28)
Other Family	.94*	(.39)	.92*	(.39)	.90*	(.39)
Parent's Highest Education (PHE)	-.22***	(.06)	-.15	(.14)	-.14	(.14)
School-Level Controls						
Midwest‡						
West	.24	(.31)	.31	(.33)	.30	(.33)
South	.33	(.24)	.35	(.26)	.34	(.25)
Northeast	.13	(.31)	.12	(.33)	.12	(.33)
Suburban‡						
Urban	-.12	(.23)	-.10	(.25)	-.07	(.25)
Rural	-.34	(.27)	-.33	(.29)	-.31	(.29)

Table 4.1 (Cont) Results from the Multilevel Models Predicting Depression

	Model 1		Model 2		Model 3	
School-Level Controls						
Big School	.35	(.26)	.19	(.28)	.18	(.27)
Medium School‡						
Small School	.50*	(.25)	.45†	(.26)	.45†	(.26)
Public School‡						
Private School	.12	(.36)	-.008	(.39)	.001	(.39)
Measures of Fit						
% Same Race			-.001	(.004)	.002	(.005)
PHE Above School Avg.			.05	(.24)	.15	(.29)
PHE Similar to School Avg.‡						
PHE Below School Avg.			.22	(.23)	.41	(.28)
GPA Above School Average			.44*	(.22)	.80**	(.27)
GPA Similar to School Avg.‡						
GPA Below School Avg.			-.67**	(.24)	-.48†	(.29)
% Same Athletic Status			.01*	(.01)	.002	(.008)
% Same Extracurricular Status			-.01	(.01)	-.01	(.01)
Friend Involvement Above School Avg.			-.22	(.23)	-.78**	(.29)
Friend Inv. Similar to School Avg.‡						
Friend Inv. Below School Avg.			.71***	(.19)	.50*	(.25)
Interactions						
F x % Same Race					-.005	(.005)
F x PHE Above School Avg.					-.17	(.32)
F x PHE Below School Avg.					-.31	(.31)
F x GPA Above School Avg.					-.64*	(.30)
F x GPA Below School Avg.					-.35	(.32)
F x % Same Athletic Status					.02†	(.009)
F x % Same Extracur. Status					.001	(.01)
F x Friend Inv. Above School Avg.					.91**	(.30)
F x Friend Inv. Below School Avg.					.41	(.31)
Intercept	9.96***	(1.14)	10.77***	(1.41)	10.95***	(1.48)

* p < .05; ** p < .01; *** p < .001; † p < .10

Notes: ‡ excluded as reference category.

All models contain a random slope for female.

N = 8,467

Figure 1 Predicted Depression Scores for Boys and Girls at Different Levels of Fit (GPA)

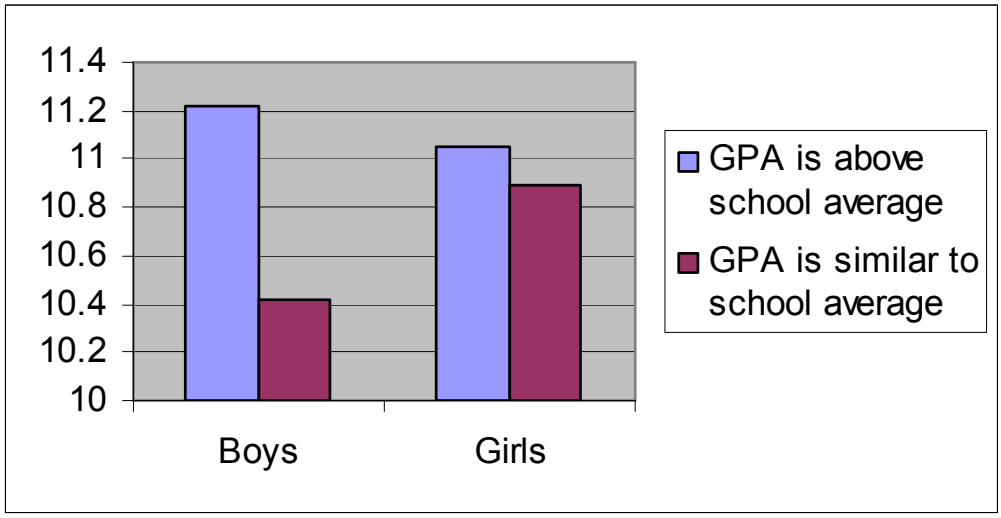

Figure 2 Predicted Depression Scores for Boys and Girls at Different Levels of Fit (Friend Involvement)