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CHAPTER 7: PROBLEM BEHAVIORS

Here we report our findings for School Problems, Delinquent Behaviors, Cigarette Use, Alcohol Use, and Marijuana Use. Results are shown in Tables 13 and 14 and Figure 4.

School Problems

Our measure focuses on breaking school rules and getting punished for these infractions. There was a significant positive linear slope coupled with a negative quadratic slope that did not vary by SES, gender, race/ethnicity, the gender by race/ethnicity interaction, or parents' marital status (see Table 13). On average, these adolescents reported slightly increasing levels of school problems from 12 to 16 years, which then stabilized from 16 to 17 years and decreased somewhat from 17 to 18 years (see Figure 4).

At age 14, males reported more school problems than did females. There were no significant differences in school problems according to SES, race/ethnicity, the race/ethnicity interaction, or parents' marital status. For all youth, the average reports of school problems such as cheating, skipping classes, or being sent to the principal's office were very low. Taking into account the covariates, on average, these adolescents reported frequencies no greater than .5, with "never" (0) to "1 -9 times" (1). Essentially, this scale was dichotomous, with 50-70% of the students saying "never" and the remaining students saying "a few times."

Cigarette Use

There was a significant positive linear slope for cigarette use that was moderated by race/ethnicity (see Table 13). On average, these adolescents' reports of smoking cigarettes increased linearly from early to late adolescence (see Figure 4); this increase was greater for European American adolescents than for African American adolescents. The overall linear increase in smoking likely reflects the fact that cigarette use is legal for individuals over 18 and, thus, a subset of the adolescents is increasingly adopting an acceptable adult behavior as they get closer to 18. This finding supports research that has found smoking typically begins during adolescence, if it begins at all (Johnston et al., 2011).

There was one significant difference at the intercept. In line with other findings (Johnston et al., 2011), European American adolescents reported higher levels of smoking cigarettes than did African American adolescents. Interestingly, unlike some other recent reports, which showed slightly more males likely to smoke cigarettes compared to females (Johnston et al., 2011), we found no gender difference in these patterns.

In terms of mean levels, cigarette smoking increased from slightly more than "one a day" to close to "1-5 a day" from ages 12 to 20 (controlling for the covariates). For European American youth, smoking increased from about "one a day" to about "1-5 a day" by age 20. For African American youth, it remained slightly more than "one a day" throughout adolescence. So although smoking increased, it still remained at a relatively low level, especially among our African American youth. In fact, the majority of adolescents (i.e., 94% at Wave 1, 89% at Wave 3, 74% at Wave 4, and 70% at Wave 5) reported never smoking cigarettes.

Delinquent Behaviors

There was a significant negative quadratic slope (see Table 13). On average and consistent with other studies (Hirschi & Gottfredson, 1983; Moffitt, 1993), these adolescents reported the highest frequency of engagement in delinquent behaviors at ages 12 to 14; these reports then declined from ages 15 to 20 years (see Figure 4). There were no significant differences in the slopes according to SES, gender, race/ethnicity, the gender by race/ethnicity interaction, or parent's marital status, where $p < .01$.

At age 14, males reported more frequent engagement in delinquent behaviors than did females. But in terms of absolute levels, the rates of delinquent behaviors were quite low. Given that the measure is a count of the extent to which adolescents participated in a range of delinquent behaviors that included stealing a motor vehicle, being in a gang fight, hitting someone, damaging property for fun, stealing, and lying to parents, the low absolute counts indicate that, on average, adolescents had only engaged in between 1 and 2 of these behaviors in the past six months to a year (controlling for the covariates). Such low frequencies are to be expected given the severity of many of these behaviors, with the exception of lying to one's parents.

Alcohol Use

Like smoking cigarettes, there was a significant linear increase for drinking alcohol and a significant positive quadratic slope resulting from accelerated alcohol use in late adolescence (see Table 13). On average, these adolescents' reports of alcohol use remained stable from 12 to 14 years and then increased from 14 to 20 years, with the sharpest increase from 17 to 20 years (see Figure 4), supporting findings that alcohol use peaks during early adulthood (Johnston et al., 2011) and that these increases reflect taking up of behaviors that are legal in adulthood.

At 14 years, European American adolescents reported drinking more alcohol than did African American adolescents. By and large, these findings are consistent with other studies and suggest very limited use of alcohol by African American youth, in particular (Johnston et al., 2011). Controlling for the covariates, on average, adolescents' reports of drinking alcohol ranged from .5 to 2, with 0 equal to "never" and 2 equal to "2-3 times per month."

Marijuana Use

There was a significant linear increase in smoking marijuana that was moderated by gender and race/ethnicity (see Table 13). For the average adolescent, smoking marijuana increased steadily from early to late adolescence. The increase was particularly marked for male and European American adolescents (see Figure 4).

There were also several significant mean-level differences at the intercept. At 14 years, male and European American adolescents reported more use of marijuana than did female and African American adolescents, in support of previous findings (Chen & Jacobson, 2012; Johnston et al., 2011). Consequently, European American males reported the highest levels, whereas African American females reported the lowest levels.

In terms of the mean levels, these adolescents' marijuana use increased from virtually "never" to slightly more than "rarely" (taking into account the covariates). Thus, although there were increases over adolescence, the rates remained quite low, with the exception of European males who reported, on average, using marijuana two to three times per month by age 20. It is important to note that the high percentage of missing data on this variable at Waves 1 and 3 may have resulted in underestimates of the usage of marijuana, particularly in early adolescence.

Summary of Problem Behaviors

In line with our expectations, developmental trajectories of problem behaviors increased during adolescence, with the exception of Delinquent Behaviors. Consistent with recent research on national rates of adolescent drug use (Johnston et al., 2011), adolescents' use of cigarettes, alcohol, and marijuana increased from early to late adolescence. Similar to the other measures of academic functioning, they also reported increasing school problems from early to middle adolescence that stabilized somewhat as they approached high school graduation. In contrast, they engaged in fewer delinquent behaviors of other kinds as they matured into late adolescence. Most importantly, these adolescents reported very low levels of engagement in any of the problem behaviors, and the developmental changes were quite small, suggesting that the emergence of problem behaviors during adolescence is neither inevitable nor typical and, if it occurs, it tends to happen at quite low frequencies.

There were significant mean-level differences in these negative behaviors according to gender. As predicted, 14 year-old males, on average, engaged in more problematic behaviors, both in and out of school, and were more likely to use marijuana and increase their use of marijuana throughout adolescence compared to females. These findings are supported by previous research showing that gender differences in the usage of drugs emerge in middle to late adolescence (Johnston et al., 2011), and males are more likely to engage in delinquent and problem behaviors compared to females (see Farrington, 2009, for a review). Contrary to other studies (Bray et al., 2001; Wallace et al., 2002; Webb et al., 2002), we found no gender differences in the slope of the trajectories of alcohol and cigarette use, only marijuana use.

There were also consistent R/E differences. In line with our predictions and other studies (Chen & Jacobson, 2012; Gutman et al., 2011), European Americans reported higher mean levels of cigarette, alcohol, and marijuana use, as well as a greater

rate of increase in cigarette and marijuana use, than did African Americans from early to late adolescence. These findings further highlight the higher risk of European American adolescents for a range of negative health behaviors compared to African American adolescents.

Similar to contemporary findings (Johnston et al., 2011) documenting parallel trends in the use of cigarette, alcohol, and most other drugs; we found no significant differences according to SES and family composition. Although previous studies have shown that adolescents who are lower SES or reside in a single-parent household engage in more problematic behaviors than those residing in higher-SES households with two biological parents (e.g., Barrett & Turner, 2006; Fergusson, Horwood, & Lynskey, 1994), we found no evidence of these associations. Further, given previous findings on the high levels of drinking among college students, we also expected to find that SES would moderate the quadratic increase in drinking in late adolescence (Schulenberg et al., 2001; Johnston et al., 2011). We found no evidence that SES and parents' marital status were associated with increases in drinking alcohol in our sample, however.

Overall, one-fifth to one-third of the variance in these indicators was attributed to differences between adolescents. Of the variation by group, approximately one-fifth to more than one-half of the variance was explained by age. Demographic variables accounted for between 5% and 10% of the intercept variance (see Table 14), with the greatest amount of variance accounted for in Delinquent Behaviors (10%) and up to 12% of the linear slope variance accounted for in Cigarette Use.

Table 13

Growth Models for Problem Behaviors

	School Problems	Cigarette Use	Delinquent Behaviors	Alcohol Use	Marijuana Use
For Intercept					
Intercept	.40***	1.34***	1.65***	.46***	.26***
SES	-.01	-.04	-.02	-.03	-.03
Gender	-.12***	-.04	-.25***	-.10	-.20***
Ethnicity	-.02	.29***	-.00	.24***	.14**
GXE	-.09*	.14	-.13*	-.09	.01
Single	-.03	-.02	-.07	-.06	-.04
Intact	-.03	-.04	-.06	-.01	.00
Age	-.03	-.03	-.06	.02	-.04
Age^2	.01	-.00	.01	.03	.00
For Linear slope					
Intercept	.05***	.13***	-.02*	.08***	.15***
SES	-.00	- .01	.00	.01	-.01
Gender	-.01	.00	-.00	-.02	-.08***
Ethnicity	.02	.10***	.02*	.06*	.09***
GXE	-.02	.08*	.00	.03	.01
Single	-.01	-.02	-.00	.00	.02
Intact	.01	-.01	.01	.01	-.02
For Quadratic slope					
Intercept	-.01***	.00	-.01***	.03***	.00
SES	.00	.00	-.00	.01	.00
Gender	.00	-.01*	.00	.00	.00
Ethnicity	-.00	.00	-.01*	.02	-.01*
GXE	.01	-.00	.00	-.01	-.00
Single	.01	.00	.01	.00	.00
Intact	.00	-.00	.00	-.01	.00

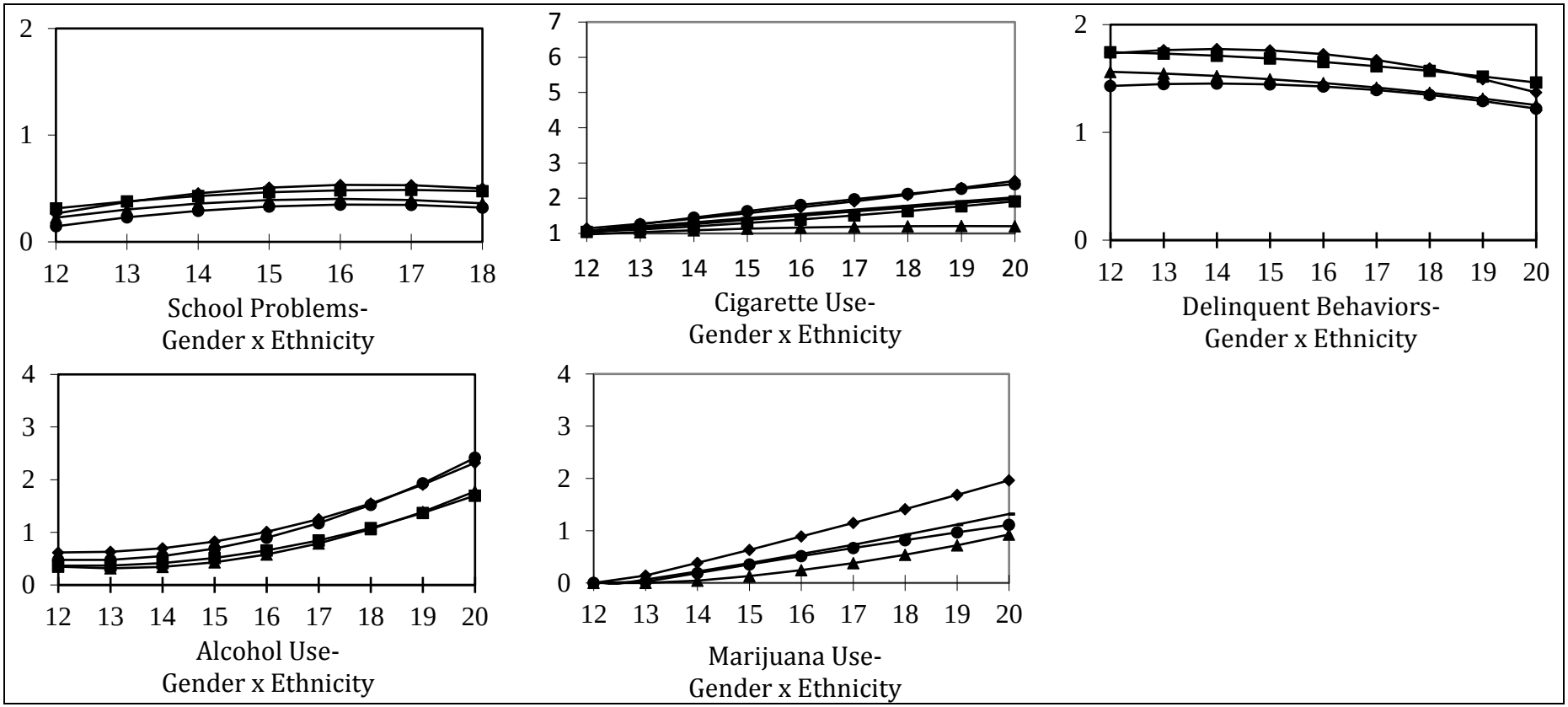
Note. ***p<.001, **p<.01, *p<.05.

Table 14

Residual Variance for Problem Behaviors

	Unconditional Means Model	ICC	Unconditional Growth Model	R^2 Level 1	With Level 2 Predictors	% Explained
School Problems		.24		.24		
Level 1	1.842		1.400			
Intercept	.569***		.682***		.624***	9%
Linear Slope			.030***		.030***	<1%
Cigarette Use		.28		.55		
Level 1	.739		.363			
Intercept	.284***		.309***		.294***	5%
Linear Slope			.042***		.037***	12%
Quad Slope			.002***		.002***	<1%
Delinquent Behaviors		.34		.17		
Level 1	1.493		1.233			
Intercept	.762***		1.068***		.966***	10%
Linear Slope			.030*		.030*	<1%
Quad Slope			.001		.001	<1%
Alcohol Use		.19		.49		
Level 1	.981		.503			
Intercept	.223***		.312***		.296***	5%
Linear Slope			.025*		.024*	4%
Quad Slope			.002***		.002***	<1%
Marijuana Use		.23		.61		
Level 1	.843		.328			
Intercept	.248***		.262***		.246***	6%
Linear Slope			.055***		.051***	7%
Quad Slope			.003***		.003***	<1%

Note. ***p<.001, **p<.01, *p<.05.



Note. The x-axis represents age in years, whereas the y-axis represents the mean of the scale, controlling for the covariates. For the gender and race/ethnicity growth curves, European-American females are represented by the circle, European American males are represented by the diamond, African American females are represented by the triangle, and African American males are represented by the square.

Figure 4. Growth Curves for Problem Behaviors.