AP AAQ 1

Introduction: Sleep is important for adolescent mental and physical development. This study examined the effects of sleep quality and sleep duration in the lives of adolescents.

Participants: Participants were 193 parent-adolescent pairs who were recruited in one of several ways (in person, via email, or through a health science volunteer database). Adolescents had to be in the 9th-11th grades in a public or private day school in the United States, be between the ages of 14 and 17, and live full-time with the parent participating in the study. Both the parent and the adolescent had to agree to participate.

The ages of the parents and adolescents are presented in Table 1.

Table 1: Participant Ages

Group	Mean Age	Standard Deviation
Parents	47.6	5.40
Adolescents	15.7	0.94

Of the parents, 80% were female. Of the adolescents, 54.4% were female. The adolescents reported being in 9th grade (37%), 10th grade (32%), and 11th grade (31%).

Participants' racial/ethnic identification is presented in Table 2.

Table 2: Participant Racial/Ethnic Identification

	Parent	Adolescent
White/European American	79%	71%
Black/African American	14%	14%
Multiracial	2%	8%
Hispanic or Latino	3%	2%
Asian/Asian American	2%	2%
Other	1%	2%

The education levels of the parents who participated in the study are shown in Table 3.

Table 3: Parent Participant Education Levels

Highest Education Level	Percentage
Graduate degree	42%
Bachelor's degree (4-year degree)	35%
Associate's degree (2-year degree) or some college classes (no degree)	19%
High school diploma, GED, or less	4%

Method

Researchers from a university in New York measured four factors during this study:

1. Family environment was measured using the Confusion, Hubbub, and Order Scale (CHAOS) which evaluates the level of family disorganization and chaos (called environmental confusion). Environmental confusion is rated on a 5-point scale ranging from "definitely untrue" to"definitely true." Higher scores indicated higher levels of chaos in the family environment.
2. Daily sleep quality was self-reported by the adolescents using a 4-item survey each morning for 7 consecutive days. This survey measured overall sleep quality (1= very restless to 5= very sound); sleep latency (approximate number of minutes before falling asleep); how rested participants were (1= exhausted to 5= very refreshed); and number of wake-after-sleep episodes. Higher scores indicated better sleep quality.
3. Daily sleep duration was calculated for each day by finding the difference between the time the adolescent reported going to sleep and their reported waking time the next morning.

4. Daily psychological functioning was self-reported by the adolescents in a survey. Two items assessed anxiety symptoms, and two items assessed depressive symptoms using a 4-point scale (1= not at all to 4= nearly all day). Higher scores indicated higher levels of anxiety and depressive symptoms.

The baseline survey completed by all participants also included the following measurements: parents' use of inconsistent discipline, child age and gender, adolescent-reported daily daytime naps (in minutes), school start time, and family socioeconomic status (SES). Participants used an online survey platform to complete a morning diary survey (e.g., sleep-related measures). Each entry was time-stamped, and researchers asked participants to complete the morning diary survey within an hour of waking up and to complete the evening diary survey within an hour before going to sleep. A total of 186 adolescents (96.4%) completed at least 2 days of the daily diaries, and 178 adolescents (92.2%) completed at least 4 days of daily diaries. All participants were paid $10 for completing the baseline survey. Adolescents were compensated $15 for completing at least 4 days of the sleep diary. The study was approved by the university's Research Subjects Review Board, and informed consent from parents and assent from adolescents were obtained before participation.

Results and Discussion

Family chaos did not predict adolescents' sleep duration, according to this study. When comparing each participant's sleep duration with their anxiety and depressive symptoms, researchers found that sleep duration did predict those symptoms ($p < 0.05$). Longer sleep durations from the previous night that were reported in the morning were associated with less anxiety and depressive symptoms reported later that evening. This association emerged after controlling for average levels of sleep duration and the average levels of anxiety and depressive symptoms for each participant. However, when comparing one participant to another participant, researchers found that sleep duration did not predict anxiety and depressive symptoms.

Family chaos significantly predicted adolescents' sleep quality such that more chaotic and disorganized family environments were associated with lower levels of sleep quality ($p < 0.05$), according to this study.