

# The Association between Sleep Deprivation, Aggression, and Antisocial Behavior in Adolescents in Ejigbo, Lagos, Nigeria

Olaniyi Makinde

Karin Österman

Kaj Björkqvist

Åbo Akademi University, Vasa, Finland

## Abstract

The study investigated whether there were associations between how much adolescents slept per night and how much aggressive and antisocial behavior they displayed and were exposed to. Two hundred thirty-eight adolescents (122 females, 116 males; mean age = 15.5 years,  $SD = 2.0$ ) from Ejigbo, Lagos, Nigeria, participated in the study, which was conducted with a paper-and-pencil questionnaire. It was found that the total sleeping time of the adolescents correlated negatively with five scales measuring Adult Aggression, Sibling Aggression, Domestic Violence, Parental Negativity, and Antisocial Behavior. Thus, the less the adolescents slept, the more they were exposed to aggression, and they also themselves behaved more aggressively and antisocially. Participants living in overcrowded conditions slept less than others.

**Keywords:** Aggression, antisocial behavior, overcrowding, sleep deprivation

## Introduction

The aim of the present study was to investigate the relationship between lack of sleep and aggressive and antisocial behavior in adolescents in Ejigbo, Lagos, Nigeria. The study is part of a project investigating the relationship between overcrowding and aggressive and antisocial behavior in the same population (Makinde, Björkqvist, & Österman, 2016, 2017). A typical feature of living in overcrowded conditions is exposure to noise and sleep deprivation.

### *Sleep Deprivation and Aggressive Behavior*

Carskadon and Dement (2011) have defined sleep as a reversible behavioral state of perceptual disengagement from, and unresponsiveness to, the environment. Sleep deprivation refers to a state when the individual needs to sleep, but is forced to stay awake. Sleep deprivation has been found to be associated with irritability, exhaustion, increased stress, and, in cases of long deprivation, psychotic behaviors (e.g.

hallucinations) (Smith, Jones, & Gullickson, 1995). The quantity of sleep required differs from person to person, but in general, an adult needs between 7-9 hours of sleep each night.

According to a report by WHO (1987), living in overcrowded conditions leads to lack of sleep for all family members, and the report suggests that this might have an adverse effect on the academic achievement of children. Articles by Edwards, Baglioni and Cooper (1990), and Evans, Saegert and Harris (2001) presented evidence for the fact that children raised in a crowded home usually have behavioral problems both at home and at school (see also Evans, Lepore, Shejwal, & Palsane, 1998). Overcrowding may affect the child's wellbeing and academic achievement due to noise and lack of a quiet place to study, and lack of productive sleep; it may affect mood and behavior, and enhance susceptibility to illness, which in turn might interrupt their schooling routine (Saegert & Evans, 2003). Sleep deprivation has been found to contribute to anger and stress, which may lead to feelings of anger, which in turn may lead to acts of aggression (Edwards, Baglioni, & Cooper, 1990; Åkerstedt, Petersen, Axelsson, Lekander, & Kecklund, 2012).

Teenagers reporting inadequate sleep have been found to come from overcrowded homes; they tend to engage in numerous extra-curriculum activities, leading to emotional health concerns, poor school performance, and behavioral problems (Dorofaeff & Denny 2006). Overcrowding has the propensity to invoke negative emotions, such as anger, and provoke insults between the cohabitants (Anderson & Carnegiey, 2004; Wilkowski & Robinson, 2010). In individuals with a history of severe aggressive behavior (e.g. prison inmates, psychiatric patients), an association between poor sleep and aggressiveness has also been found (Anderson & Carnegiey, 2004; Ireland & Culpin, 2006; Kamphuis, Dijk, Spree, & Lancel, 2014; Kamphuis, Meerlo, Koolhaas & Lancel 2012). It can be concluded that anger and aggressive behavior tend to correlate with sleep deprivation

### ***Noise, sleep deprivation, and aggression***

Noise pollution is the most common cause for sleep deprivation. According to Howden-Chapman (2004), noise pollution consists of excessive noise in overcrowded houses and from neighboring houses and traffic. The noise causes sleep disruption, which has been found to cause impaired concentration and irritability (Berglund, Lindvall & Schwela, 1995). In addition, noise has been found to negate prosocial and interpersonal responses, such as helping, sharing, and comforting behavior (Sherrod & Downs 1974). Furthermore, high-intensity noise also enhances interpersonal aggressive behavior (Cohen & Spacapan 1984; Donnerstein & Wilson 1976).

If adolescents are exposed to noise over a period of time, they tend to exhibit not only negative and antisocial behavior, but also withdrawal, anxiety agitation, and helplessness (Stansfeld, & Matheson, 2003). A study conducted by Bailey and Coore-Desai (2012) with Jamaican inner city children found that there is a greater risk of

violence and criminal acts among those who are exposed to noise. Their analysis revealed that shouting, noise making, fighting, verbal abuse, slapping, tearing pupil's books, hitting, and beating were more prevalent in early childhood classes of these children. Akpochafo (2014) also examined the prevalence of childhood violence and found that forms of antisocial behavior like shouting, fighting, noise making, verbal abuse, hitting, slapping, beating, and tearing of pupils' books are found both in rural and urban areas. Parents in overcrowded homes are less compassionate (Solari & Mare 2012), which may lower the quality of parenting, reflect negatively on the parent-teacher relationship, and this in turn may affect children's academic performance at school (Caldwell & Bradley 1984).

Adolescents growing up in an overcrowded home are likely to end up as their parents, contributing to social inequality (Leventhal & Newman 2010), negative parent-child relationships (Baldassare 1979; Evans, Lepore, Shejwal, & Palsane 1998), loneliness, and isolation (Wenz 1984), which all could contribute to mental health issues and premature mortality.

## **Method**

### ***Sample***

A total of 20 public schools, five from each of the four cities of Ejigbo, Isolo, Egbe and Ago-Palace in the Lagos metropolitan area were selected for participation in the study. A random selection of junior and senior secondary school classes (1-3) from each school resulted in a total sample of 238 adolescents participating in the study. The age range was 12-20 years. The sample consisted of 122 females ( $m = 15.1$  years,  $SD = 2.0$ ) and 116 males ( $m = 15.8$  years,  $SD = 2.0$ ). The age difference was not significant. Of the respondents 72.3% ( $n = 172$ ) were Christians and 27.7% ( $n = 66$ ) Muslims. A total of 71% ( $n = 169$ ) of the respondents lived in apartments with only one bedroom for the whole family (in the present study regarded as a crowded condition), while 29% ( $n = 68$ ) lived in apartments with more than one bedroom (a non-crowded condition). These proportions are in agreement with those found by Adeyemi, Waziri, Atere, and Emmanuel (2009).

### ***Instrument***

The data were collected with a questionnaire, including five scales constructed specifically for the study: Adult Aggression, Sibling Aggression, Domestic Violence, Parental Negativity, and Antisocial Behavior. The items were constructed in focus group discussions in which three persons took part: two of them were experts in psychometrics, and the third an expert in local conditions. Items and reliability scores (Cronbach's  $\alpha$ ) of the scales are presented in Table 1. Responses were given on a five-point scale ranging from 0 to 4 (never, seldom, sometimes, often, and very often), measuring the degree to which respondents agreed with the statements in the questionnaire.

**Table 1**

*Items and reliability scores of the scales of the study (N = 238)*

Scales and Items	
<p><i>Victimisation from Adult Aggression</i> (<math>\alpha = .84</math>)</p> <p>Pulled your ears Pulled your hair Slapped you Hit you with an object Pinched you Thrown things at you Sleep punishment</p>	<p><i>Victimisation from Sibling Aggression</i> (<math>\alpha = .91</math>)</p> <p>Pulled your hair Slapped you Hit you with an object Pinched you Thrown things at you Twisted your arms Bitten you</p>
<p><i>Parental Negativity towards Adolescents</i> (<math>\alpha = .84</math>)</p> <p>Name calling or bullying Insults Making and breaking of promises Constant criticism Intimidation Harassment</p>	<p><i>Witnessing of Domestic Violence</i> (<math>\alpha = .82</math>)</p> <p>Physical fights Quarrels Thrown things at each other Damaged belongings Twisted each other's arm Stabbed each other</p>
<p><i>Antisocial Behaviour of Adolescents</i> (<math>\alpha = .87</math>)</p> <p>Stolen petty things Used a catapult on a friend or neighbor or someone else Cheated neighbors of their belongings Smoked cigarettes Unconcentrated at school Fighting in school Absenteeism from school</p>	

***Procedure***

The data were collected using a paper-and-pencil procedure. The questionnaires were distributed among junior and senior secondary school students in Ejigbo and the neighboring towns of Isolo, Egbe and Ago-Palace, all in the Lagos metropolitan area. A total of 20 public schools, five from each city, participated in the study, and a randomized sample was drawn from these schools.

***Ethical considerations***

Permission was obtained from teachers, parents, and school coordinators, prior to the questionnaire being administered. The study was conducted in accordance with the Personal Data Act, Ministry of Justice in Finland, guaranteeing the anonymity of the respondents, and the guidelines of the Ethical Board of Åbo Akademi University.

## Results

A *t*-test was conducted to investigate whether those who lived in crowded conditions (only one bedroom for the whole family) differed from those who lived in non-crowded conditions (more than one bedroom) regarding sleeping time. This was found to be the case: those who lived in crowded conditions slept at an average 6 hours (*SD* = 1.5) per night, while those who lived in non-crowded conditions slept at an average 7.8 hours (*SD* = 1.2) per night. This difference was significant [ $t_{(229)} = 9.52$ ,  $p < .001$ ].

The total sleeping time was correlated with the five scales of the study. The correlation coefficients are presented in Table 2. As the table shows, all scales correlated negatively, in many cases relatively highly, with the total sleeping time of the responding adolescents.

**Table 2**

*Correlations between Total Sleeping Time and the Six Scales of the Study (N = 238)*

Scales	Correlations with Sleeping Time
Adult Aggression	-.30 ***
Sibling Aggression	-.45 ***
Domestic Violence	-.47 ***
Parental Negativity	-.34 ***
Antisocial Behaviour	-.43 ***

\*\*\*  $p < .001$

## Discussion

The findings of the present study show that the total sleeping time of the adolescents living in Ejigbo, Lagos, correlated negatively with all the five scales of the study. That is, the less the adolescents slept, the more likely they were to engage in aggressive and antisocial behaviors. They were also more likely to experience parental negativity and aggression from siblings, and witness domestic violence between their parents.

As is well-known, correlations do not prove causality. However, the results are very consistent, and in line with those by for instance Anderson and Carnagey (2004),

Dorofaeff and Denny (2006), Edwards et al. (1990), Åkerstedt et al. (2012), and Wilkowski and Robinson (2010), who also found an association between lack of sleep and aggression and antisocial behavior. There is also evidence for a connection between overcrowding and lack of sleep (as in the present study) and noise (Howden-Chapman, 2004).

This study is yet an argument for the need to avoid overcrowded housing conditions for humanitarian reasons. Housing policies in Nigeria and other densely populated areas in the world would benefit from taking into account psychosocial concomitants of domestic overcrowding. Special focus should be placed on the needs of adolescents. Further research on both psychological and behavioral concomitants of overcrowding and sleep deprivation among all age groups is essential.

## References

- [1] Adeyemi, E.O., Waziri, B.A., & Atere, A. A., & Emmanuel, A. (2009). Economic reforms, living conditions and urban violence: A situation analysis of metropolitan Lagos. *Ethiopian Journal of Environmental Studies and Management*, 2, 36–48. doi:10.4314/ejesm.v2i2.45918.
- [2] Akpochafo, G. O. (2014). Teachers' perception of prevalence and forms of violence in early childhood classes in Delta State of Nigeria. *Journal of Educational and Social Research*, 4, 469–474.
- [3] Anderson, C. A., & Carnagey, N. L. (2004). Violent evil and the general aggression model. In A. G. Miller (Ed.), *The social psychology of good and evil* (pp.168–192). New York: Guilford Press.
- [4] Bailey, C., & Coore-Desai, C. (2012). The effect of exposure to community violence on levels of aggression: Evidence from a sample of Jamaican children. *Childhood*, 19, 188–203.
- [5] Baldassare, M. (1979). *Residential crowding in urban America*. Berkeley, CA: University of California Press.
- [6] Berglund, B., Lindvall, T., & Schwela, D. (1995). From the WHO Guidelines for community noise to healthy soundscapes. Retrieved from <http://www.who.int/iris/handle/10665/66217>
- [7] Caldwell, B. M., & Bradley, R. H. (1984). *Home observation for measurement of the environment*. Little Rock, AR: University of Arkansas at Little Rock.
- [8] Carskadon, M.A., Dement, W.C. (2011). Monitoring and staging human sleep. In Kryger, M.H., Roth, T., Dement, W.C. (Eds.), *Principles and practice of sleep medicine*, 5th edition, (pp. 16–26). St. Louis MS: Elsevier Saunders.
- [9] Cohen, S., & Spacapan, S. (1984). The social psychology of noise. In D. M. Jones & A. J. Chapman (Eds.), *Noise and society* (pp. 221-245). Chichester, UK: Wiley.

- [10] Donnerstein, E., Wilson, D. (1976). Effects of noise and perceived control on ongoing and subsequent aggressive behavior. *Journal of Personality and Social Psychology*, 34, 774–781.
- [11] Dorofaeff, T. F., & Denny, S. (2006). Sleep and adolescence. Do New Zealand teenagers get enough? *Journal of Paediatrics and Child Health*, 42, 515–520.
- [12] Evans, G. W., Saegert, S., & Harris, R. (2001). Residential density and psychological health among children in low-income families. *Environment and Behavior*, 33, 165–180.
- [13] Edwards, J. R., Baglioni, A. J., & Cooper, C. L. (1990). Stress, Type-A, coping, and psychological and physical symptoms: A multi-sample test of alternative models. *Human Relations*, 43, 919–956.
- [14] Edwards, J. N. (1994). *Household crowding and its consequences*. Boulder, CO: Westview Press.
- [15] Evans, G. W., Lepore, S. J., Shejwal, B. R., & Palsane, M. N. (1998). Chronic residential crowding and children's wellbeing: an ecological perspective. *Child Development*, 69, 1514–1523.
- [16] Howden-Chapman, P. (2004). Housing standards: a glossary of housing and health. *Journal of Epidemiology & Community Health*, 58, 162–168.
- [17] Ireland, J. L., & Culpin, V. (2006). The relationship between sleeping problems and aggression, anger, and impulsivity in a population of juvenile and young offenders. *Journal of Adolescent Health*, 38, 649–655.
- [18] Kamphuis, J., Dijk, D. J., Spreen, M., & Lancel, M. (2014). The relation between poor sleep, impulsivity and aggression in forensic psychiatric patients. *Physiology & Behavior*, 123, 168–173.
- [19] Kamphuis, J., Meerlo, P., Koolhaas, J. M., & Lancel, M. (2012). Poor sleep as a potential causal factor in aggression and violence. *Sleep Medicine*, 13, 327–334.
- [20] Leventhal, T., & Newman, S. (2010). Housing and child development. *Children and Youth Services Review*, 32, 1165–1174.
- [21] Saegert, S., & Evans, G. W. (2003). Poverty, housing niches, and health in the United States. *Journal of Social Issues*, 59, 569–589.
- [22] Sherrod, D. R., & Downs, R. (1974). Environmental determinants of altruism: The effects of stimulus overload and perceived control on helping. *Journal of Experimental Social Psychology*, 10, 468–479.
- [23] Smith, A. P., Jones, D. M., & Gullickson, T. (1995). *Handbook of human performance*, Vol. 1. Psyc critiques, 40, 709–709.

- [24] Solari, C. D., & Mare, R. D. (2012). Housing crowding effects on children's wellbeing. *Social Science Research, 41*, 464–476.
- [25] Stansfeld, S. A., & Matheson, M. P. (2003). Noise pollution: non-auditory effects on health. *British Medical Bulletin, 68*, 243–257.
- [26] Wenz, F. V. (1984). Household crowding, loneliness and suicide ideation. *Psychology: A Journal of Human Behavior, 2*, 25–29.
- [27] Wilkowski, B. M., & Robinson, M. D. (2010). The anatomy of anger: An integrative cognitive model of trait anger and reactive aggression. *Journal of Personality, 78*, 9–38.
- [28] Åkerstedt, T., Orsini, N., Petersen, H., Axelsson, J., Lekander, M., & Kecklund, G. (2012). Predicting sleep quality from stress and prior sleep—a study of day-to-day covariation across six weeks. *Sleep Medicine, 13*, 674–679.