

# Immigrant generation, socioeconomic status, and economic development of countries of origin: A longitudinal study of body mass index among children

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## Abstract

Prior research has yielded mixed evidence of a relationship between immigrant generational status or acculturation and overweight or obesity among children of immigrants. This study examined socioeconomic status (SES) and economic development of the sending country as additional factors influencing children body mass index (BMI) and as moderating the relationship between parental generational status and BMI. Using data from the kindergarten cohort of the Early Childhood Longitudinal Survey ( $N = 16,664$  children) carried out in the USA, the research estimated growth curve models and tested the significance of interaction terms between generational status (i.e., children of the 1.0 generation, who arrived at age 12 or older; children of the 1.5 generation, who arrived between the ages of birth and 11; and children of natives), SES, and the country of origin's gross domestic product per capita. Results indicate that the children of the 1.0 generation from higher-income countries tended to gain more weight than children from lower-income countries. The relationship between family SES and weight gain was positive among the first-generation children and stronger among those from lower-income countries than from higher-income countries. Weight gain was positively associated with generation only among lower SES children from low-income countries. It was negatively associated with generation for higher SES children from low-income countries. The results are consistent with a conceptual model of BMI assimilation that links global nutrition patterns to the levels and socioeconomic variations in BMI among the 1.0-generation and their children, and conceptualizes assimilation as occurring within socioeconomic strata. This approach leads to the expectation that overweight is likely to be positively associated with generation among those from low-income countries (as measured by GDP/capita) with low SES but negatively associated among those from low-income countries with high SES.

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## Background

In the United States, overweight appears to increase among immigrants with increasing exposure to US society. For example, research has found a positive relationship between years living in the United States and overweight and obesity among

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foreign-born adults (Antecol & Bedard, 2006). Among children, the likelihood of being overweight is higher for US-born than foreign-born children (Gordon-Larsen, Harris, Ward, & Popkin, 2003; Popkin & Udry, 1998). Findings such as these tend to be interpreted through the lens of assimilation theory. Assimilation is a social process that results in the decline of ethnic distinctiveness along economic, spatial, and sociocultural dimensions (Alba & Nee, 2003). Sociocultural assimilation is sometimes referred to as “acculturation” (Gordon, 1964). Although classic assimilation theories predict convergence toward the white American middle class for immigrant families (Alba & Nee, 2003), others—such as the segmented assimilation perspective—emphasize variability in the process, whereby race/ethnicity and socioeconomic status (SES) intersect to produce various assimilation pathways (Portes & Zhou, 1993). The health literature draws on another assimilation theory—the negative assimilation model—to interpret findings on immigrant health. This theory emphasizes worsening outcomes for immigrants over time and with increasing generations in the United States (Amaro & de la Torre, 2002; Hummer, Rogers, Nam, & LeClere, 1999; Landale, Oropesa, & Gorman, 1999; Rumbaut & Weeks, 1989). The main hypothesis is that exposure to the American environment (e.g., fast food industry and advertising, availability of cheap, prepackaged food, reliance on cars) leads to poorer health behaviors involving diet, exercise, and smoking, which eventually leads to overweight and obesity (Blumenthal, 2002; Carter, 2002; Fried & Nestle, 2002).

However, irregularities in the findings on weight among US immigrant and native children cast doubt on the idea that exposure to US culture contributes to overweight. Gordon-Larsen et al. (2003), for example, found no relationship between generational status and overweight among Mexican-origin adolescents. If there were a direct relationship between exposure to US lifestyles and obesity, it is puzzling that it does not appear among the single largest immigrant group. Further, when more direct indicators of acculturation are employed (i.e., other than proxies such as generational status or time in the United States), the link between acculturation and body mass index (BMI) grows murky. For example, Ariza, Chen, Binns, and Cristoffel (2004) found no significant relationship between acculturation scales and overweight risk factors in Hispanic children ages 5 and 6. Similarly,

in some studies of adults, less acculturated persons appeared more likely to be overweight. Spanish speakers are more likely to be overweight than English speakers among Hispanic women in general (Khan, Sobal, & Martorell, 1997), and within the second generation in particular (Sundquist & Winkleby, 2000). Other evidence suggests that among overweight women, less acculturated women are less likely to view their weight as a health problem than more acculturated women (Arcia, Skinner, Baily, & Correa, 2001).

One possible reason for the inconclusive findings is that patterns by generational status or duration in the country vary across groups, a possibility that is predicted by the leading contemporary theories of assimilation as discussed below. By lumping together groups that have different generational patterns, researchers may be unable to identify the circumstances in which increased exposure to US culture is associated with either healthy or unhealthy outcomes. In addition, as noted by Arcia et al. (2001, p. 43), “the current understanding that acculturation is a process with substantial variability has not led to an examination of the factors that may explain that variability.” We suggest here that the relationship between parents’ generational status and child overweight likely depends on the economic development of immigrants’ countries of origin and the family’s SES.

Because childhood is a critical socialization period, immigration scholars commonly distinguish between those who arrived before adolescence (about age 12) and were socialized primarily in the United States (the 1.5 generation) and those who arrived at older ages and were socialized primarily in their country of origin (the 1.0 generation) (Portes & Rumbaut, 2001; Portes & Zhou, 1993; Rumbaut, 1994). In this study, we distinguish between the children of the 1.0 generation, the 1.5 generation, and natives. Among the children of the 1.0 and 1.5 generations, we examine the relationships between SES and economic development of country of origin, and changes in BMI levels between kindergarten and fifth grade. We further examine whether SES and economic development moderate the relationship of generational status and children’s BMI.

Most large-scale studies on obesity among immigrant children have focused on adolescents (Gordon-Larsen et al., 2003; Popkin & Udry, 1998) rather than younger children. One study examined

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