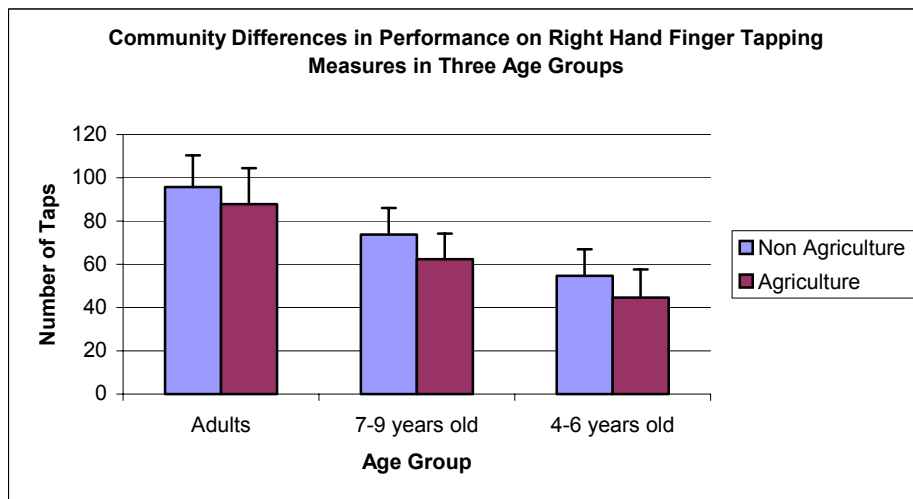


ORGANOPHOSPHATE PESTICIDE EXPOSURE: NEUROBEHAVIORAL ASSESSMENT  
OF LATINO ADULTS AND CHILDREN RESIDING IN AGRICULTURAL COMMUNITIES

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Organophosphate pesticides (OP) are widely used for pest control in both agriculture and residential settings. Studies have documented the environmental contamination related to the use of these chemicals and families of agricultural workers have been shown to be at greater risk of exposure. This increased risk is associated with both the close proximity of their homes to fields where pesticides are applied and from take-home exposure from individuals working in agricultural fields. While OP pesticides are known to have acute toxic effects, less is known about low-level chronic exposures. Research examining neurobehavioral effects of pesticide exposure has focused primarily on the acute effects in adult working populations. The goal of this study was to compare neurobehavioral performance between farmworkers and their children from agricultural and non-agricultural communities in Oregon. In 1999, we conducted a cross-sectional study of 92 latino adults from one agricultural community of primarily tree fruit crops and 45 latino adults in a comparison non-agricultural community and compared their performance on standardized neurobehavioral tests. In 2001 we conducted a cross-sectional study of latino children ages 4-6 years in the same two communities (agricultural community, n = 22 and referent community, n = 21) for a comparison of their neurobehavioral performance. Our third sample consisted of children ages 7-9 residing in the same agricultural community in 2002 (n = 11) and an urban setting (n = 17). We have previously documented the extent of OP residues in the houses in these three communities, which indicated significantly more environmental contamination in the agricultural community. Study participants were administered the age-appropriate neurobehavioral test battery two times in each community. Multiple regression methods were used to compare the performance of the agricultural and non-agricultural participants while controlling for factors known to influence performance on these tests such as age and gender. The impact of learning or practice effects was also examined. Results from these three studies indicate that participants from Hood River consistently perform poorer on neurobehavioral



tests than participants from non-agricultural referent communities. These differences are apparent regardless of the age group being tested. The following figure illustrates results from the second testing among the three age group samples on a common measure of neurobehavioral performance. These results indicate the sensitivity of

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neurobehavioral performance tests but also the methodological challenges inherent in assembling appropriate control groups, and correlating performance with environmental exposures. (Funded by: NIEHS P42 ES10338 and NIEHS RO1 ES08707).