Notes from the abstract:

(1) Height correlated negatively with the number of siblings but this is negligible in a model controlling for birthweight, parental heights, and mothers age at birth.

(2) Cranial volume is not related to sibling number.

(3) Cranial volume is negatively associated with self-reported meat and general resource shortage.

(4) Cranial volume was related to family structure and paternal (father) education.

(5) Children living with both parents had larger heads in comparison to living in families containing step parent.

(**Question**): Did the article discuss the effect on step parent sex! When the case is step mother or step father! Answer: The case study time period is considered as having a step dad rather than mom.

(6) Families including both genetic parents provide non-material benefits that stimulate predominantly cranial growth.

(7) The studies developmental period (?), cranial volume appeared a more sensitive marker of growth constraints than height.

(8) potential of using cranial volume for quantifying physical impact of non-material parental investment

Notes from the Introduction:

When relative variation in resource acquisition is larger than variation in resource allocation among individuals, positive correlations between life-history traits can be observed.

The brain-body growth trade-off hypothesis: high costs of human brain development require compensatory slowing of body growth rate at a time when the energy demand of growing brain peaks.

Trade-offs in human growth are mediated by parental investment. Parents expend material as well as cognitive and emotional resources to benefit current offspring at the cost to their ability to invest in other components of fitness.

Understanding how external constraints via parental investment relate to head and body growth is important because both stature and cranial volume (a proxy for brain size) correlate phenotypically and genetically with cognitive abilities and/or educational attainment.

Intelligence and education, in turn, strongly and robustly predict essential life outcomes including occupational status, happiness, health, and life expectancy.

Material and Methods

822 randomly selected adolescents (teenagers) from Tartu (about 100.000 inhabitants), Estonia

418 girls and 404 boys (average age of 13.8, SD 1.2 range 10.9-17.2 years)

Cranial volume

girls 7.884\*(head length-11) + (10.842\*head width-11) - 1593.96

boys 6.752\*(head length-11) + (11.421\*head width-11) – 1434.06 (units in mm)

**Is height correlated negatively with the number of siblings? Is this correlation negligible in a model controlling for birthweight, parental heights, and mothers age at birth?**

Lauringson et al. claims that the negative correlation between height and number of siblings negligible in a model controlling for birthweight, parental heights, and mothers age at birth. Let’s first check the height distributions for different number of siblings (Figure 1).

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Figure 1. The height distribution of different family structures, with unknown (NA) number of siblings and ranging from zero to nine siblings raised by the family, is given. The last density plot is empty, so that the height within family types having six, seven and nine number of siblings are distinct.

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Figure 2. Boxplot with the data points shown on the graph. The plot clearly indicates that there is only one data point for number of sibling six, seven and nine. The gender number of sibling six and seven is female, for nine is male.

Most of the data points in the data set are from number of siblings zero, one, two, or three. So that this should be taken into account. I want to criticize more about the genders and the number of data points in the data set.

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Figure 3. The number of data points for each gender is given on the figure.

Lauringson et al. mentions that resource limitation provides an arena for parent-offspring, inter-offspring, and inter-parental conflicts. Conflicts are most prominent in families including step-parents (particularly step fathers) who provide less direct care, monetary support, financial aid for continued education, monetary support, financial aid for continued education, playtime, and homework help to their stepchildren than do biological parents.

I checked if the step father influences the cranial volume and height.