TRACKING OF BMI IN 3-15 YEAR OLD DUTCH, TURKISH, MOROCCAN AND SOUTH ASIAN CHILDREN: HISTORICAL COHORT STUDY

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Tracking

1. longitudinal development and the maintenance of a relative position or ranking over time (looking forward)
2. the ability to predict subsequent measures from previous measures (looking backward)

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Population The Hague (Den Haag)

Youth 0-19, by ethnic group in %, 2013:

Dutch	43
Turkish	12
Moroccan	10
Surinamese	9
Dutch Antillean	2
Other non-western	10
Western	14

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What is known about tracking of BMI?

- Consistent relation between current BMI (class) and BMI at previous age (except during infancy)
- stronger relation when intervals are shorter and at an older age
- Many studies conducted with populations born before the obesity epidemic.
- Stronger relationships in current era?

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Objectives

- to determine the degree of tracking of BMI and BMI status in Dutch, Turkish, Moroccan and (Surinamese) South Asian children between 3 and 15 years of age living in the Netherlands
- to determine tracking patterns of thin, normal weight and overweight adolescents at age 13-15 years

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Methods

- Routine data,
- Standard Preventive Health Assessments: 3-4, 5-6, 7-10 and 13-15 years
- From Youth Health Care digital records
- Cohort born 1994-1997, measured 1997-2013
- Measured at ages 3-15 years
- by trained YHC professionals
- Background data from health record

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Methods: BMI references and cut-offs

- Universal BMI reference/ cut-offs (Cole, IJPO 2012): relation BMI and body fat (associated diseases) is similar across ethnic groups
  - BMI <17 thinness (II and II)
  - BMI ≥17 & <25 normal weight
  - BMI ≥ 25 overweight
- South Asian specific reference/ cut-offs (de Wilde, PLOS ONE 2013)
  - BMI <15 thinness
  - BMI ≥15 & <23 normal weight
  - BMI ≥ 23 overweight

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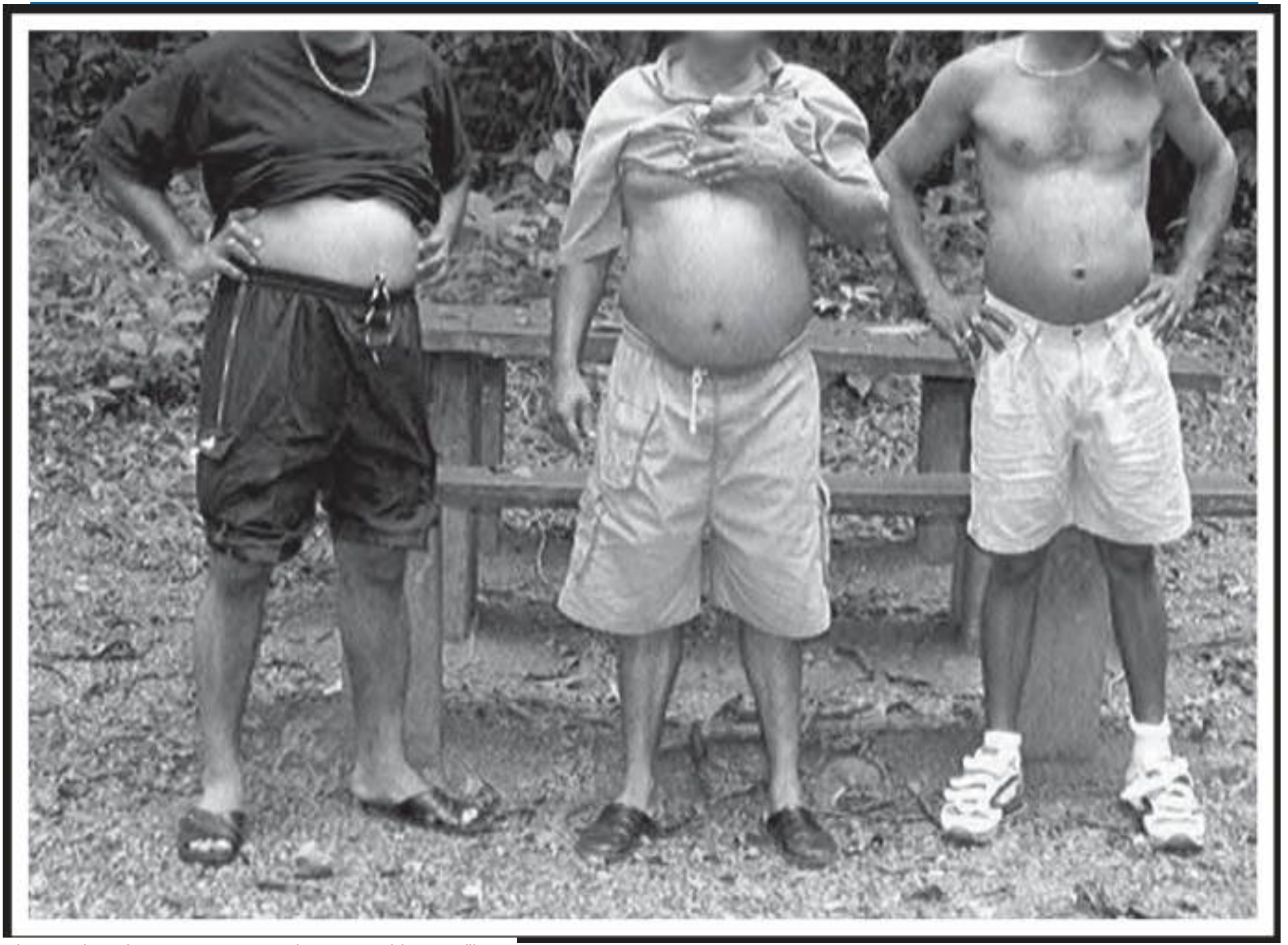

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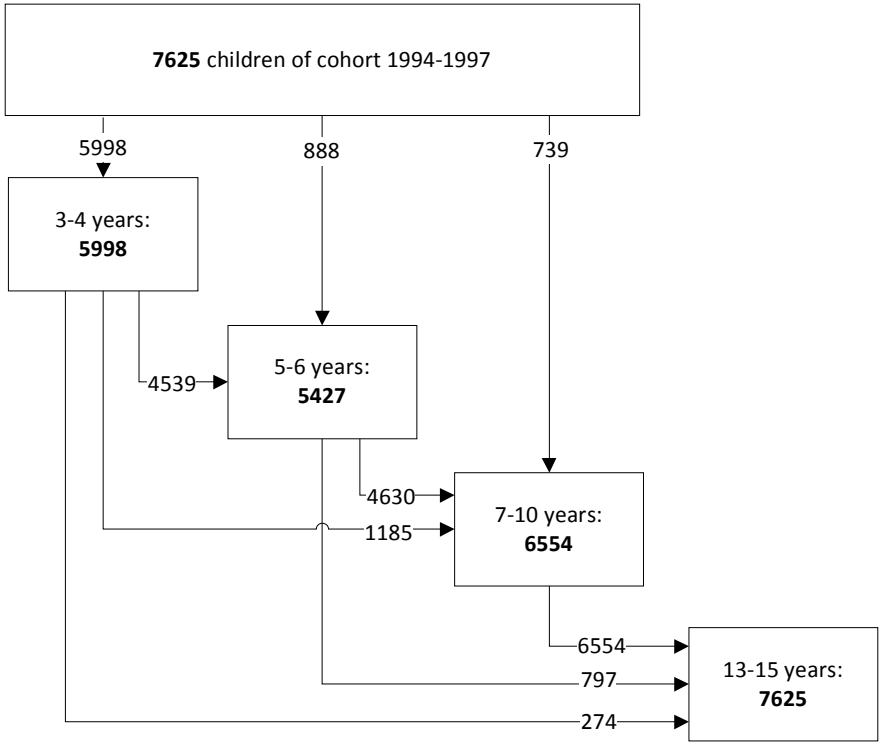
Results: Number of assessments at different ages

- 25 604 measurements



Ethnicity	N	%
Dutch	4528	59
Turkish	1289	17
Moroccan	958	13
South Asian	850	11

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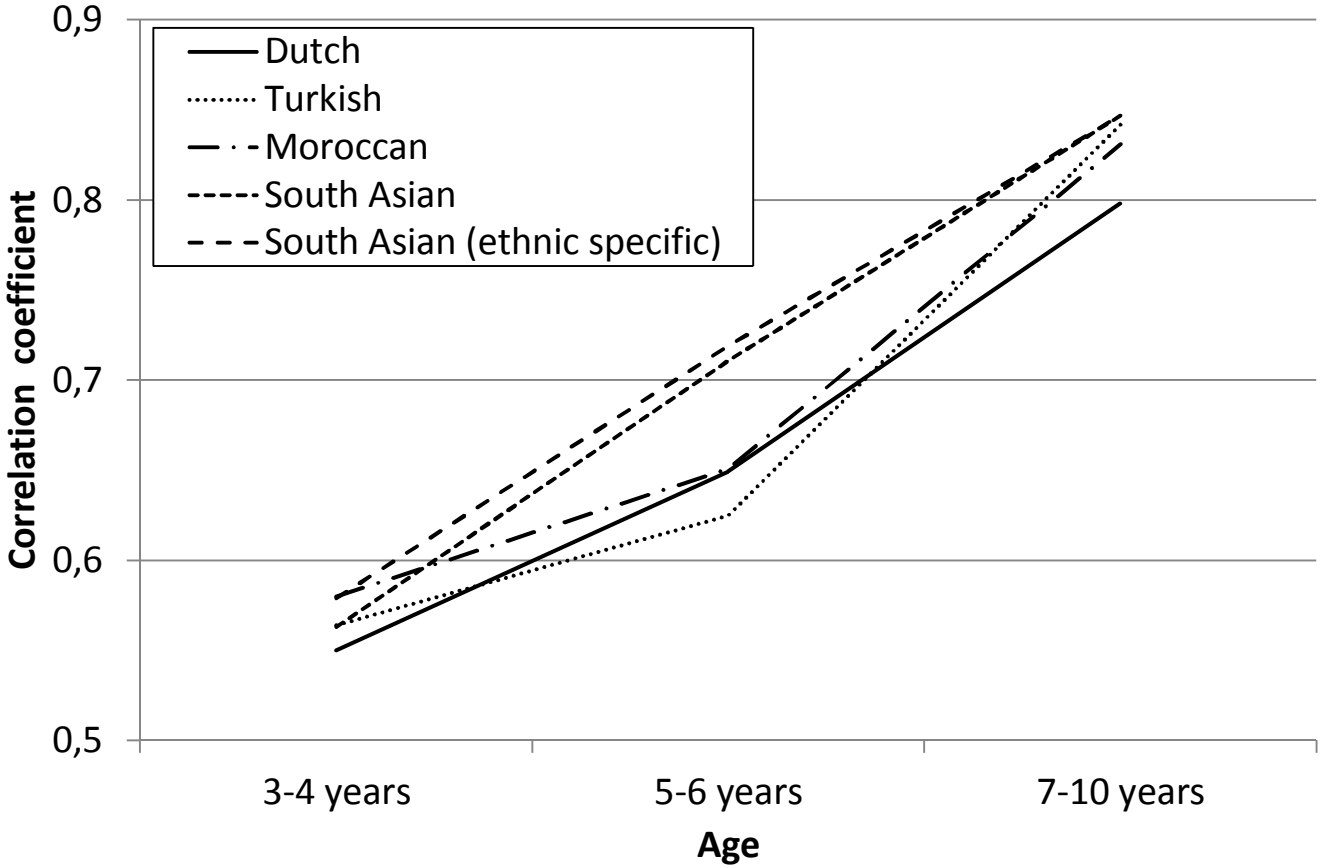
Correlation BMI z-score at 13-15 years of age



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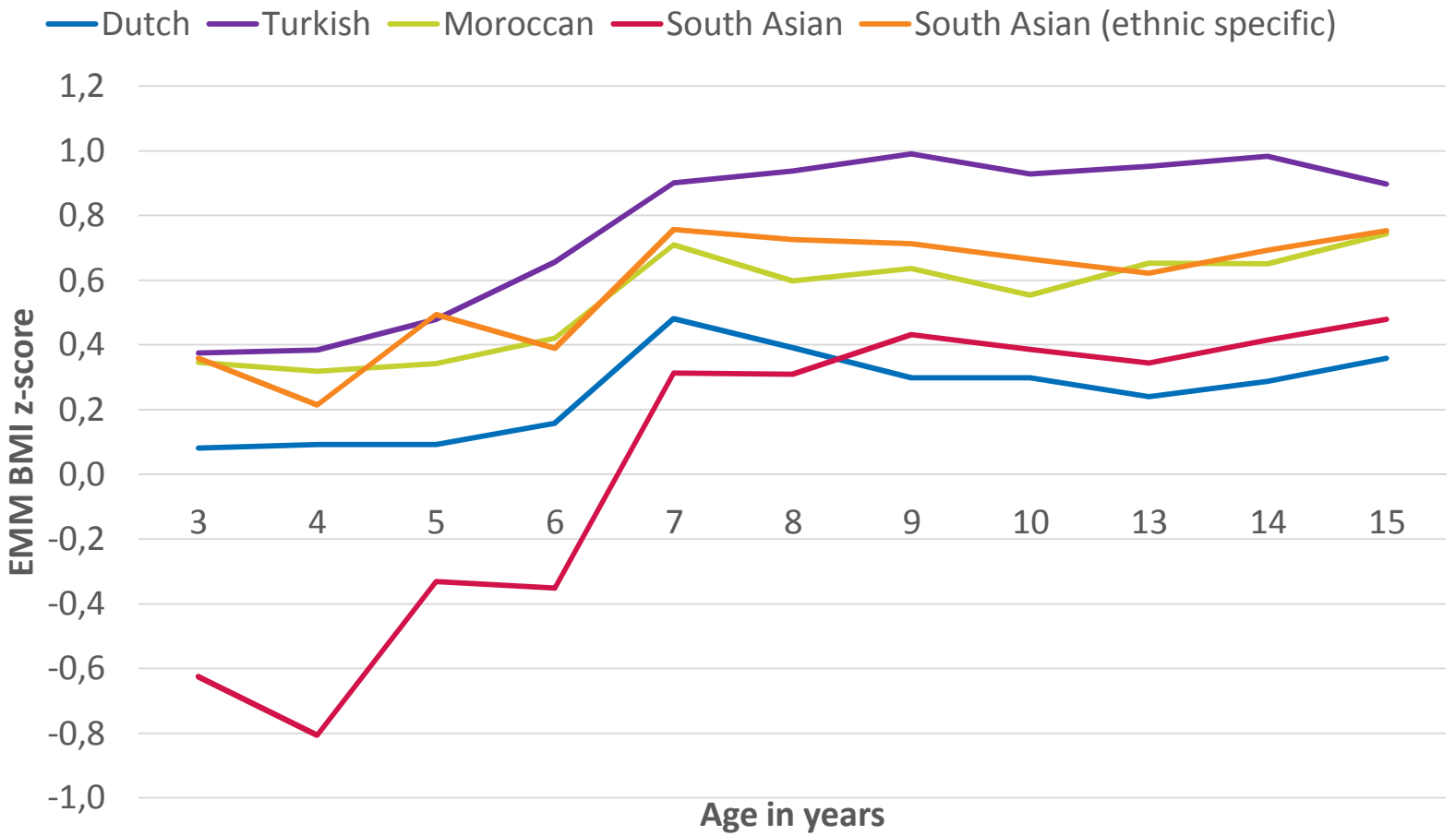
Estimated marginal mean BMI z-score cohort 1994-1997 by ethnic group



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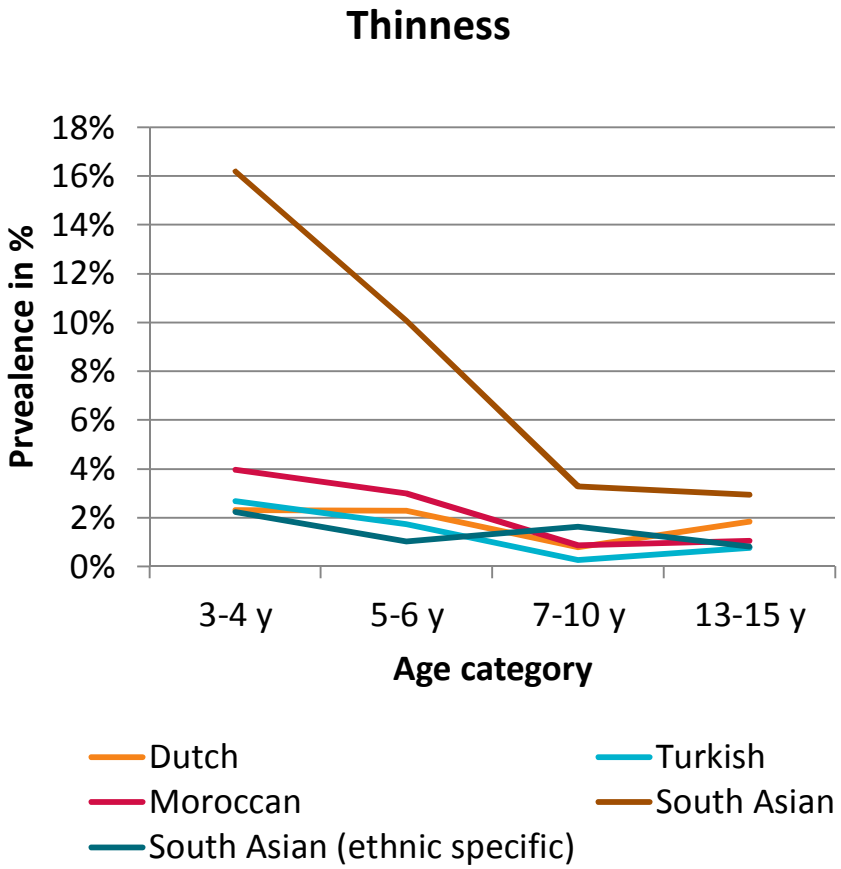
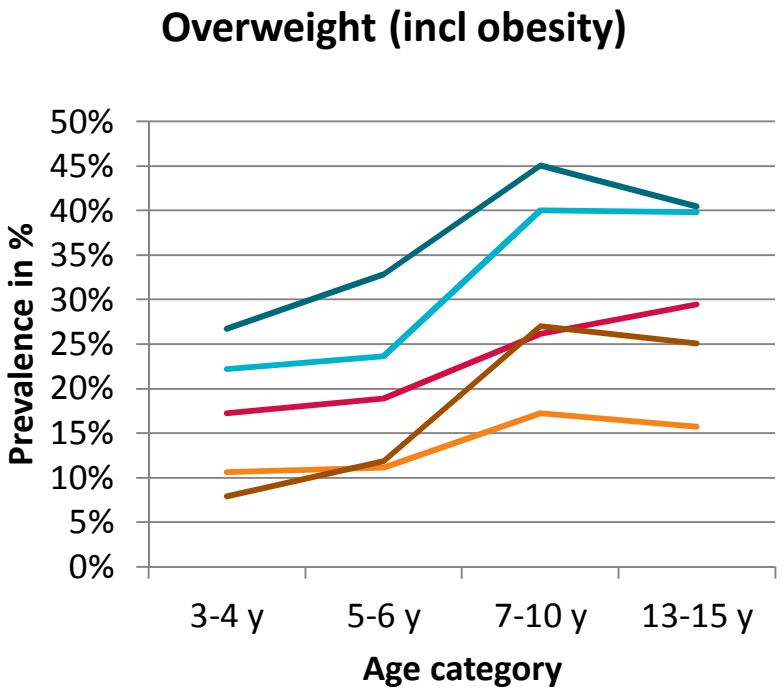
Thinness and overweight prevalence by ethnic group and age





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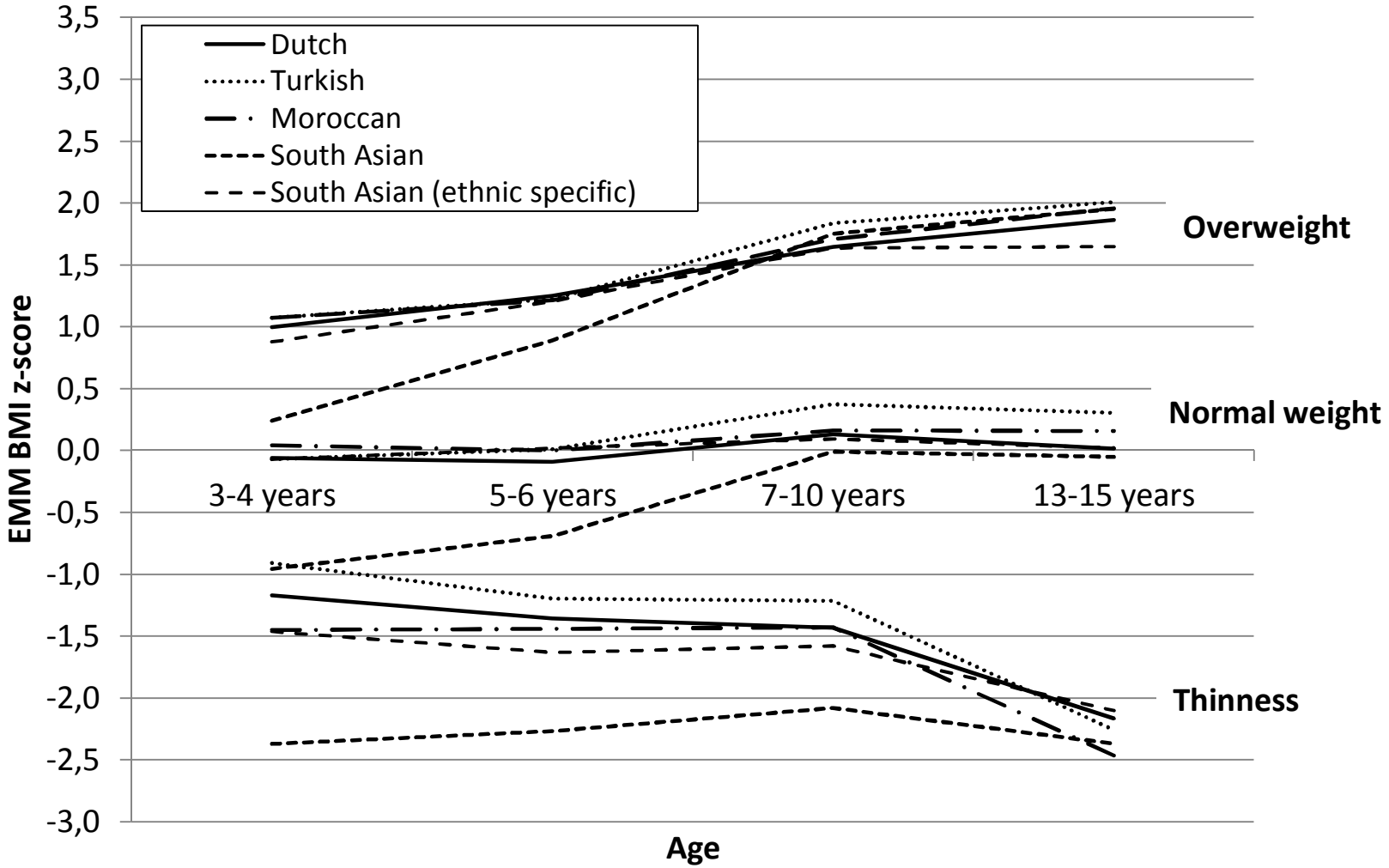
Tracking by weight status in 13-15 year olds



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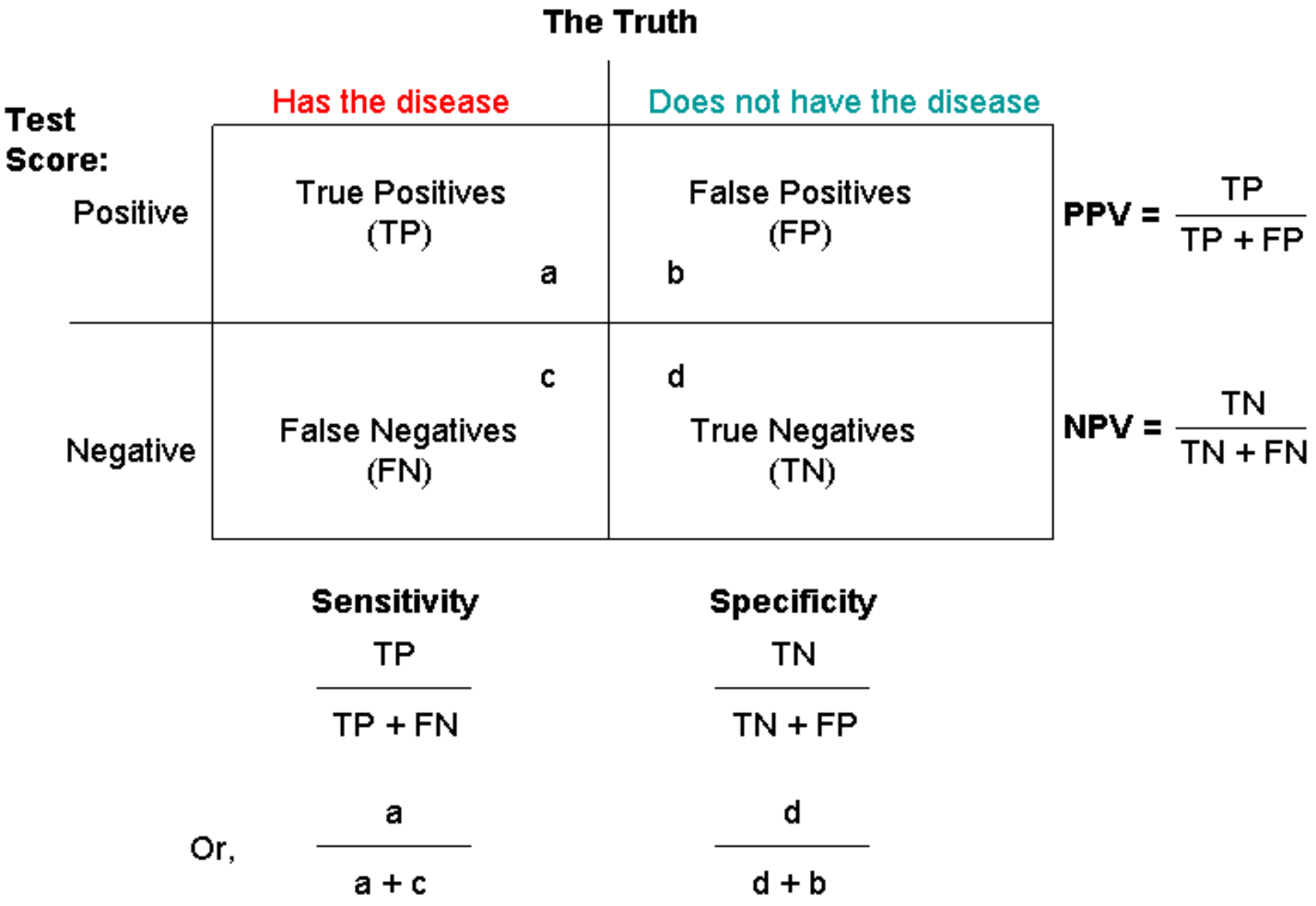

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Conclusion

- Overweight seems to develop mainly < 3-4y and between 5-6y -> 7-10y after which the prevalence stabilises
- Tracking pattern of BMI (z-score) are largely similar in most ethnic groups, except in South Asian children based on universal reference (inappropriate)
- Sensitivity of previous overweight status increases with age to high
- PV+ of overweight status moderate to high
- Higher sensitivity of thinness mainly in South Asian children but low PV+
- Results from South Asian BMI reference more concordant with other ethnic groups

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Discussion

- No measurements <3 y
- Prediction in normal weight children seems impossible with only weight status:
  - What are the determinants?
  - BMI z-score change?
- Overweight during adolescence tracks into adulthood?

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