

Relationship of Rhinitis and Respiratory Allergy and Asthma Phenotypes in an Urban Birth Cohort

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Introduction

- Epidemiological studies have commonly demonstrated a link between rhinitis and asthma.
- Both allergic and non-allergic rhinitis are associated with the development of asthma.
- These findings support the concept that rhinitis and asthma may represent one disease in two different parts of the respiratory system (the unified airway).

Objective

- Our objective was to test for associations between chronic nasal symptoms and hay fever symptoms and respiratory phenotypes through age 10 years in urban children.

Methods

- Chronic nasal symptoms apart from colds (starting at age 1) and hay fever symptoms, representing seasonal rhinitis (starting at age 4 years) were assessed quarterly in The Urban Environment and Childhood Asthma study, a high-risk urban birth cohort (n = 442).
- Longitudinal patterns of wheeze, allergic sensitization and lung function through age ten were used to identify six respiratory phenotypes.

Cluster Name	Wheeze	Atopy	PFT	Asthma diagnosis	N
Low Wheeze-Low Atopy (LW-LW)	Low	Low	NI	Low	95 (21.5%)
Transient Wheeze-Low Atopy (TW-LA)	Transient	Low	NI	Low	75 (17.0%)
Moderate Wheeze-Low Atopy (MW-LA)	Medium	Low	NI	High	76 (17.2%)
Low Wheeze- High Atopy (LW-HA)	Low	High	NI	Low	86 (19.5%)
Moderate Wheeze-High Atopy (MW-HA)	Medium	High	NI	High	54 (12.2%)
High Wheeze-High Atopy- Low Lung Function (HW-HA-LLF)	High	High	Obstructed	High	56 (12.7%)

Results

Figure 1. Proportion of chronic rhinitis symptoms in children grouped according to 10-year respiratory allergy and asthma phenotypes.

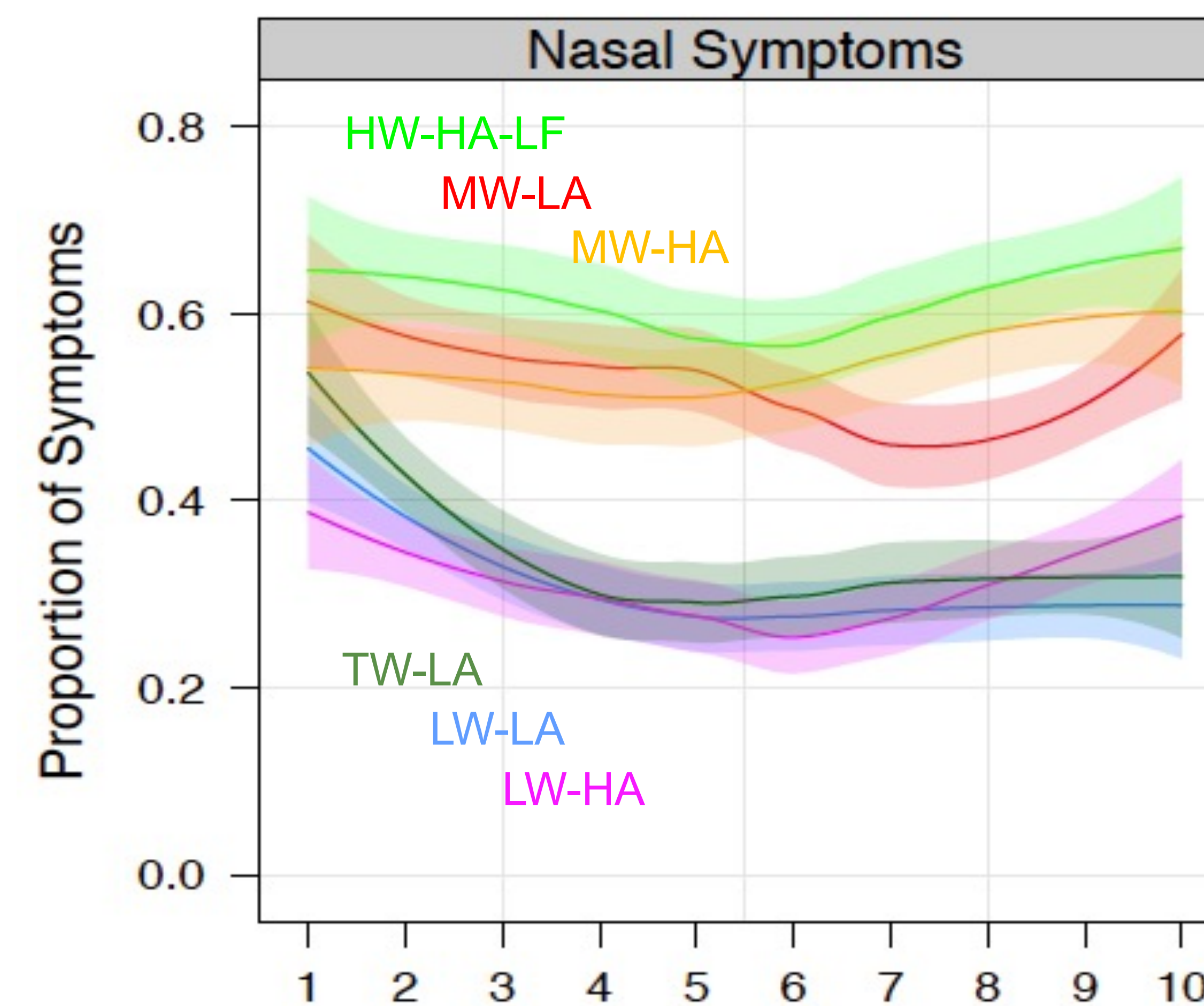
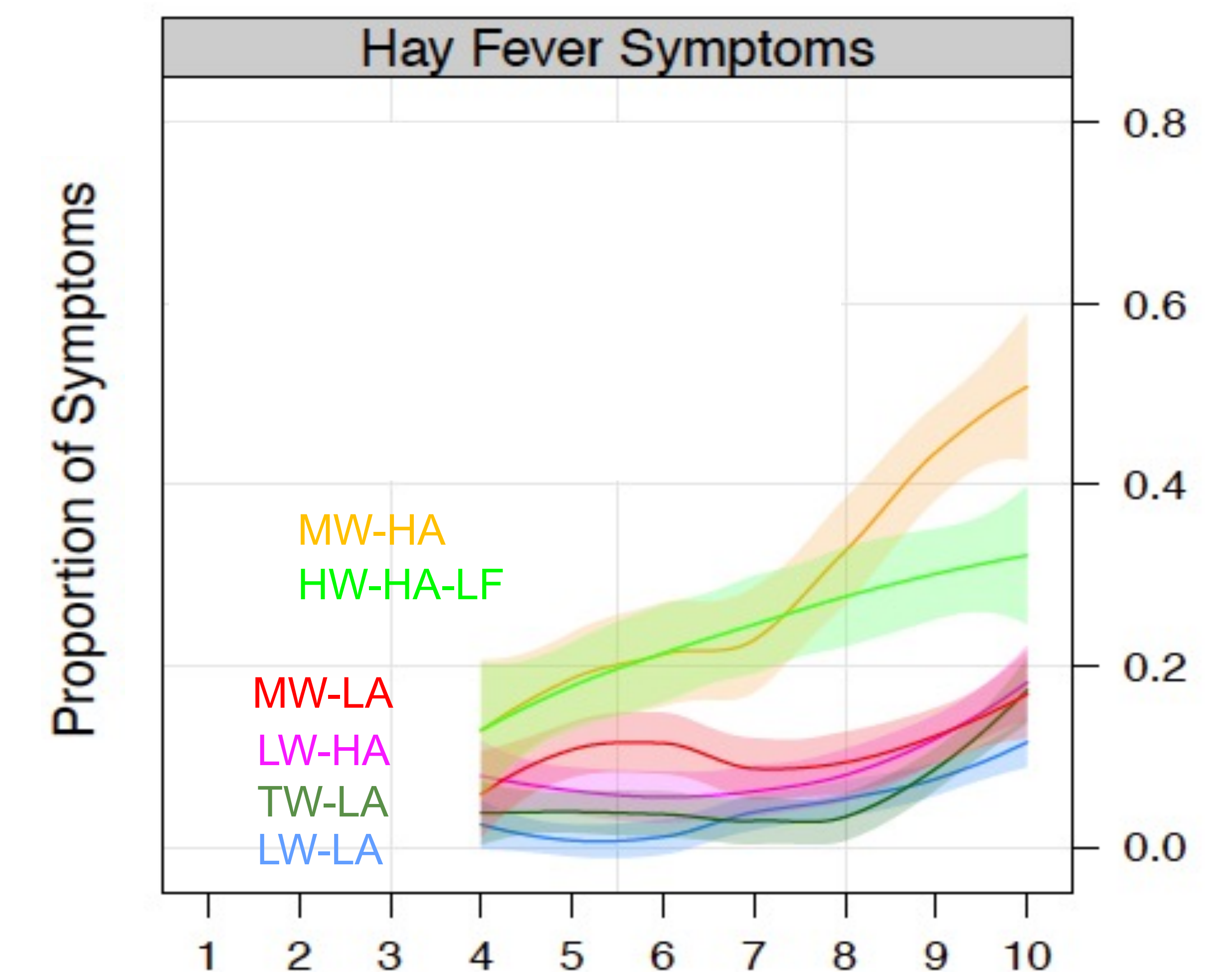


Figure 2. Proportion of hay fever symptoms in children according to 10-year respiratory allergy and asthma phenotypes.



Conclusions

Respiratory Phenotype	Chronic Rhinitis	Seasonal Rhinitis
HW-HA-LF	++	++
MW-HA	++	++
MW-LA	++	+
TW-LA	+	+
LW-HA	+	+
LW-LA	+	+

++: indicates high proportion of children reporting of symptoms
+ : indicates low proportion of children reporting of symptoms

Among high risk, urban children:

- Chronic rhinitis is most prevalent in children among the three persistent wheezing respiratory phenotypes with or without atopy.
- Hay fever is more common among children with the two wheezing phenotypes with high atopy (but not in LW-HA or MW-LA).
- These findings suggest that chronic and seasonal rhinitis symptoms are more prominent in wheezing respiratory phenotypes and may represent similar disease entities, supporting the unified airway hypothesis.