

## Language risk and temperamental profiles in Italian toddlers

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Our research investigates relations between aspects of toddler temperament and multiple indices of early language acquisition. Young children's positive or neutral emotional states are associated with better expressive and receptive vocabulary (Bloom, 1993; Dixon & Shore, 1997; Slomkowski et al., 1992). We investigate multiple dimensions of both temperament and expressive language. In this presentation, we describe the complex relations among dimensions of temperament and aspects of expressive language. Our work is based on a sample of 152 children (78 females) aged between 28 and 29 months who were recruited in 22 day-care centres. Language development and temperament were assessed using two questionnaires completed by day-care teachers over a period of two weeks of observation.

*Language measure.* The Italian version of the MacArthur Communicative Development Inventory (Words & Phrases; Fenson et al., 1993; PVB, Caselli & Casadio, 1995) was used to assess language. We analysed: (a) vocabulary size; (b) vocabulary composition (single words, predicates); (c) decontextualised comprehension and production of words; (d) morphological ability: the use of inflected forms of nouns, adjectives and verbs; and (e) combinatory language. We also created an overall risk score (range 0-3, with 3 indicating highest risk) using three indicators (vocabulary size below 1.5 standard deviations from standardization sample mean and absence of either morphological ability or combinatory language).

*Temperament.* Teachers also completed the *Italian Questionnaires of Temperament* (QUIT, Axia, 2002). The QUIT consists of 56 questions, rated on a 1-6 scale, involving children's day-to-day behaviours and generates six temperament scales: social orientation, inhibition to novelty, motor activity, positive emotionality, negative emotionality and attention.

We focus on three main findings. First, we examined correlations between the six temperament dimensions and the multiple aspects of expressive language. Where two significant correlations are expected by chance, we found 17 significant correlations. Notably, their magnitudes are relatively low (range .24 to -.23). Temperamental social orientation, positive emotionality, and attention accounted for 14 of the 17 relations to language aspects. Second, we grouped children by level of risk language (0 to 3) and related risk status to each temperament dimension (Table 1): ANOVAs reveal a significant effect of risk on two temperament dimensions: positive emotionality ( $\eta^2=.059$ ) and attention ( $\eta^2=.064$ ). Greater risk is associated with lower positive emotionality and attention. Finally, we identified two temperament profiles associated with increased language risk: (1) an inattentive profile, characterized by low attention and high motor activity and (2) an inhibited profile, characterized by high inhibition to novelty and high negative emotionality (Table 2).

Our discussion focuses on the importance of examining temperament using all its dimensions, including emotionality. We consider how toddler temperament may facilitate receiving language input or parent-toddler interaction. We also discuss the value of looking at specific aspects of language. For example, morphological ability, use of predicates, and combinatory language appeared more sensitive to temperament dimensions than other language aspects.

Table 1. Temperament scales by level of risk for language development.

Temperament	N	Social orientation (mean±s.d.) F(3,150)= 1.838 n.s	Inhibition novelty (mean±s.d.) F(3,141)= 1.818 n.s	Motor activity (mean±s.d.) F(3,149)= 1.291 n.s	Positive emotion (mean±s.d.) F(3,150)= 3.062 p<.05	Negative emotion (mean±s.d.) F(3,151)= 0.693 n.s.	Attention (mean±s.d.) F(3,151)= 3.353 p<.05
Level of risk							
0	63	4.12±.85	2.71±.84	2.94±1.04	4.68±.93	2.81±1.10	4.51±.86
1	26	4.11±.64	2.56±.87	3.26±1.01	4.87±.62	2.90±.98	4.61±.78
2	37	3.73±.99	2.89±.89	3.34±1.02	4.37±.95	2.77±1.00	4.07±.92
3	26	3.93±.79	3.10±1.05	3.01±1.23	4.23±.96	3.15±1.38	4.17±.70

Table 2 (from your profile paper)