

Recent studies started to investigate the cognitive correlates of bi-dialectalism (e.g. [1]). In terms of pragmatics, a recent study reported no differences between multilingual, bi-dialectal, and monolingual children in their ability to understand pragmatically implied meanings (implicatures), even though multilinguals and bi-dialectals had a lower language proficiency than monolinguals [1]. With regards to executive control (EC), some studies reported superior EC in bi-dialectals (e.g. [2, 3], but see [4]). This study aimed to investigate: (a) How bi-dialectalism affects children's pragmatic and EC skills in a new sample of bi-dialectal children growing up in a different sociolinguistic context and speaking a different pair of dialects than previously examined. (b) How bi-dialectalism affects the interpretation of new types of implicature not previously tested (e.g. irony). (c) The impact of bi-dialectalism on implicature processing. We were interested in how bi-dialectals compare to bilinguals and monolinguals.

Forty-four Dutch-French bilingual (121-144 months old), 46 Dutch-West Flemish bi-dialectal (121-155 months old), and 48 Dutch monolingual children (ages 121-145 months) were given: (a) A test on irony, scalar, relevance, manner, contrastive implicatures, and metaphors. Accuracy and reaction times (RTs) were recorded. (b) Various EC tasks, including the forward and backward Digit Span [5] and Corsi Blocks tasks [6] (for verbal and non-verbal working memory, respectively), the Attentional Networks task (ANT) (for inhibition) [7], and the Color-Shape task (for switching) [8]. (c) The Word Definitions Test [9] and Peabody Picture Vocabulary Test (PPVT) [10]. (c) The Family Affluence Scale (FAS) [11] and parental education levels for socioeconomic status (SES).

A Principal Component Analysis (PCA) on implicature scores (excluding relevance because of ceiling performance) showed that scalar and contrastive implicatures loaded on one factor, metaphors and manner implicatures on a second and irony on a third. A PCA on the EC measures revealed three factors, which we interpreted as representing the verbal, non-verbal and inhibition EC components. We formed composites from related variables: Verbal (from forward and backward Digit Span task) and Non-verbal working memory (from forward and backward Corsi task), Inhibition (from ANT and Color-Shape task), Vocabulary (from Word Definitions and PPVT), SES (from FAS, and parental education levels) and two Pragmatics scores. For the background measures, bi-dialectals tended to be older than bilinguals ($p=.08$) and monolinguals ($p=.06$); monolinguals had a higher Vocabulary than the other groups (all $ps<.05$); and bilinguals had a higher SES than the others, while monolinguals had a higher SES than bi-dialectals (all $ps<.05$).

A between-group analysis on Pragmatics (Pragmatics-1, Pragmatics-2, Irony) with Age, Vocabulary, and SES covaried (see [1] that this is a valid use of ANCOVA) indicated a non-significant Group effect ($F(2, 124)=1.30, p>.05$) and a non-significant Pragmatics x Group interaction ($F(4, 184.776)=.729, p>.05$). We obtained similar results when Vocabulary was not covaried and when we analysed RTs. We also found null results when performing similar analyses on the EC factors (effect of Group: $F(2, 132)=1.229, p>.05$; Group x EC interaction: $F(4, 264)=1.801, p>.05$) and this was again true when Vocabulary was not covaried.

Overall, we found no differences between bilingual, bi-dialectal and monolingual children in implicature understanding and EC, despite bilinguals' and bi-dialectals' lower vocabulary. Thus, bi-dialectal children in this study seem to pattern more like bilinguals in that they maintain equivalent to monolinguals EC and implicature understanding skills despite their lower vocabulary (see in [1] and [2] that language affects implicature and EC). Moreover, for implicature, our results are in line with previous research [1]. In terms of EC, our findings contrast with some previous studies (e.g. [2]). We discuss factors that might explain the difference in the findings, including age (in this study, children were of a relatively old age and might have reached a peak in their EC skills), SES (in this study, monolinguals were of a high SES and it is possible that bilingualism/bi-dialectalism might not have an additive effect on top of that of high SES), and the sociolinguistic context of language/dialect use [12].

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