Is quantifier interpretation susceptible to gestural influence?

Vague quantifiers such as "some" or "several" do not correspond to exact numerical values but are instead understood with respect to their linguistic context and co-present visual information (e.g. Coventry et al., 2010; Moxey & Sanford, 1993). This study investigates the influence of co-speech gestures on the interpretation of "several." Previous experimental work has shown that people associate larger areas with greater magnitudes (e.g., Henik & Tzelgov 1982, Hurewitz et al., 2006), and the same applies to more expansive gestures (Woodin et al., 2020). In our pre-registered study, participants (N=400) were asked to watch a video of a speaker uttering sentences such as "400 people were at the protest. Several of them got arrested." The hands moved either outwards or inwards during the underlined phrase (between-subjects). We analysed numerical estimates as a function of gesture with a Bayesian mixed beta-binomial regression model, finding a weak gesture effect: participants assigned higher quantities to a speaker performing an outwards gesture than a speaker performing an inwards gesture (logit coefficient: b=0.07, [-0.09, 0.22]). Confounded factors that became apparent after conducting the experiment led us to pilot a within-subjects follow-up study (30 participants) which additionally contained a no-gesture condition. This design showed a much stronger gesture effect (logit coefficient: b=0.89, [0.56, 1.22]), suggesting that the weak results of Experiment 1 may be because within-subjects control is needed to account for individual differences in how quantifiers are interpreted. We discuss the implications of these findings for future work in numerical cognition and multimodal communication.