in the building and maintenance stages were obtained (SI Fig. 10). After confirming that the obtained population distributions (D1–D4) were normally distributed (one-sample Kolmogorov–Smirnov test), mean brain-to-brain correlations for the nondefector and defector groups were computed for the building and maintenance stage of the experiment and then compared with their population distribution means (one-sample t test). If the mean brain-to-brain correlations for the nondefector and defector groups differed significantly from its population distribution means, then we assumed that partners became “synchronized” in their decision patterns. Brain-to-brain correlations only increased in the SA region for the nondefector group across stages ($t_{10} = -2.40, P < 0.038$), and only partners in the nondefector group became synchronized in their SA BOLD amplitudes as first movers in adjacent trials of trust games ($r = 0.27, P < 0.005$) (Fig. 4c).

**Discussion**

We used event-related hyperfMRI to investigate the neural correlates of conditional and unconditional trust in two-person reciprocal exchange. First, we identified two distinct regions that underlie decisions to trust in a partnership. Decisions to trust contrasted with the control condition activated the PeC. Previous research has shown that the PeC not only represents our own thoughts, feelings, and beliefs, but also represents the mental states of other people (6, 21, 23–25). Mentalizing (22) is a unique human characteristic and can be observed only in a most rudimentary form in great apes (26) and has never been observed in monkeys (27). In building mutual goodwill, partners must infer each other’s intentions to determine whether to trust their partners and whether their partners will reciprocate their trust in the future.

Decisions to trust contrasted with the control condition also activated the SA (together with the adjoining hypothalamus), a limbic region that has been demonstrated to modulate various aspects of social behavior including social memory and learning (28). In addition, the SA plays a putative role in controlling anterior hypothalamic functions and the release of the neuropeptides vasopressin and oxytocin and itself contains receptors for those neuropeptides (29–31). Besides the well known physiological functions of oxytocin in milk letdown and during labor, oxytocin is a key mediator in facilitating various complex social behaviors, including maternal care (31), pair bonding (31), social recognition (32), and the ability to form social attachment (33–35). There is evidence that greater first mover trust can be induced in strangers by the nasal administration of synthetic oxytocin (36). Because synthetic oxytocin increases trust, we surmised that partners recruited the SA to encode goodwill to maintain their trust partnership. Results from pre- and postquestionnaire ratings support our view demonstrating that partners felt significantly closer to each other and ranked themselves as being more of a partner to the other person after the experiment.

After identifying two distinct regions that underlie decisions to trust in a partnership, we next explored the dynamic role of these regions in supporting conditional and unconditional trust strategies. We arbitrarily divided the experiment into two stages: partnership-building stage and partnership stage. In addition, we identified two equal-sized groups based on their decision patterns throughout the experiment: a nondefector group in which neither player ever defected on their partners’ decision to trust, and a defector group in which partners experienced some defections during the experiment. We hypothesized that the nondefector and defector groups would adapt different trust strategies across stages of the experiment. Results revealed that first movers in the nondefector and defector groups made different use of the mentalizing system, resulting in two different neural systems for maintaining unconditional and conditional trust.

Unconditional trust assumes that one’s partner is trustworthy. During the building stage, first movers in the nondefector group showed higher activation in the PeC compared with first movers in the defector group. Through mentalizing, partners of this group verified their prior trustworthy assumption, updated the value of one’s partner’s strategy with respect to their past performance, and maintained a balanced goodwill toward each other, allowing them to avoid defections. By developing “better” mental models in this early stage, partners in the nondefector group accumulated sufficient mutual goodwill to become socially attached to each other and adopted an unconditional trust strategy.

During the maintenance stage, the nondefector group showed a higher activation in the SA compared with the defector group.