Both food restriction and risk of predation trigger social preferences by flower-naïve bumblebees.

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Prior to any functional experience with flowers, bumblebees show an unlearned preference for flowers occupied by other bees, at least when the occupied flowers are rare and the occupiers are conspicuous. The preference may possibly facilitate the discovery of food sources. In view of reports of aggressive behaviours directed towards occupiers, another possibility is that the preference may be interpreted as a competitive or defensive response. Here, compared to a baseline condition where access to sugar solution was restricted, we undertook two experimental manipulations: increasing food shortage by depriving colonies of pollen and simulating predation by exposing workers to CO2. From each of two colonies, 48 workers entered a 12-arm radial maze. Nine corridors were empty, while three corridors were furnished with a stimulus pinned to the back wall: either a coin, or a Styrofoam circle, or a dead bumblebee. Each worker made 20 unrewarded choices. In the baseline condition, the proportion of choices of the corridor occupied by the bee did not differ from chance. Both manipulations, however, lead to a significant increase in that proportion. The preference for the occupied corridor was specific: no preference for the corridors occupied by other objects was detected. Approach of other individuals is triggered by both foraging and non-foraging contexts.