Implicit updating of object representation via predictive associations

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Abstract: An adaptive function of the visual system is that it flexibly updates existing representations of objects upon changes. Such updating can also alter the representations of associated objects that are not directly observable. What mechanism supports this process? We propose that statistical learning provides a channel through which changes in one object are automatically transferred to related objects. Observers viewed a temporal sequence of paired circles. One circle in each pair then changed in size, and observers recalled the size of the other circle. When the first circle enlarged (or shrank), the second circle was judged to be larger (or smaller), suggesting that the change was automatically transferred to the predicted object (Experiment 1). The same, however, was not true if the second circle changed in size (Experiment 2). No observer was explicitly aware of the circle pairs. Thus, statistical learning enables the implicit updating of representations through predictive associations.