Organizational scholars have long called for longitudinal field studies to demonstrate unfolding patterns of employee attitudes toward female leadership. The current three-wave longitudinal study is the first to examine within person change trajectories of employees’ implicit prejudice toward female leadership following exposure to a real-life woman manager. Drawing upon distinct theoretical perspectives of intergroup contact theory, model of implicit attitude change, role congruity theory and the backlash effect as well as causal leadership attributions, it investigated the moderators of change trajectories. I hypothesize the moderating role of quantity and quality of contact with a female leader as well as perceived agency and success of a female leader as factors that drive the malleability of implicit prejudice toward female leadership. Longitudinal data were collected from civil servants of 11 metropolitan district municipalities after the local municipality elections in 2014, Turkey. I selected participants from five municipalities with a female mayor for the first time in their history (exposure group, n = 147) and six municipalities with a male municipality mayor (control group, n = 160) following the succession of mayors. Multiple indicator latent growth modeling analyses revealed no significant group difference between the exposure group and the control group on the trajectory of implicit prejudice toward female leadership. It showed a significant moderating effect of affective and professional exchange with a female mayor in reducing implicit prejudice toward female leadership in general. Similarly, the relationship between exposure and decreasing implicit prejudice was significantly moderated by perceived agentic characteristics attributed to a female mayor and men’s attribution of higher success to organization. One contribution of these results is the initial evidence that working under the authority of women’s management may not readily challenge prevailing implicit prejudice for all employees. The results provide support for APE model of attitude change, role congruity theory and backlash effect and partial support (for males) for causal attribution of leadership. I further discussed the implications of these results for diverging theoretical explanations on the malleability of implicit prejudice toward female leadership as well as practical implications for women’s management.