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## Stability of a behavioural syndrome vs. plasticity in individual behaviours over the breeding cycle: ultimate and proximate explanations

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### Highlights

- Nesting great reed warbler females exhibit a suite of correlated behaviours
- Nest defence positively correlated with aggression and negatively with breath rate
- This behavioural syndrome was stable throughout the breeding cycle
- Individual behavioural traits changed over the course of the nesting period

### Abstract

Animals often show correlated suites of consistent behavioural traits, i.e., personality or behavioural syndromes. Does this conflict with potential phenotypic plasticity which should be adaptive for animals facing various contexts and situations? This fundamental question has been tested predominantly in studies which were done in non-breeding contexts and under laboratory conditions. Therefore, in the present study we examined the temporal stability of behavioural correlations in a breeding context and under natural conditions. We found that in the great reed warbler (*Acrocephalus arundinaceus*) females, the intensity of their nest defence formed a behavioural syndrome with two other traits: their aggression during handling (self-defence) and stress responses during handling (breath rate). This syndrome was stable across the nesting cycle: each of the three behavioural traits was highly statistically repeatable between egg and nestling stages and the traits were strongly correlated with each other during both the egg stage and the nestling stage. Despite this consistency (i.e., rank order between stages) the individual behaviours changed their absolute values significantly during the same period. This shows that stable behavioural syndromes might be based on behaviours that are themselves unstable. Thus, syndromes do

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