Both human and canine salivary samples were later assayed to determine cortisol levels. Saliva samples were obtained at three time points (within 30 minutes of waking, during the day, and upon returning home). Cortisol Measures

During the day of saliva collection, participants were provided with flyers and cotton balls to collect their dog’s saliva as well. Participants were asked to follow a protocol developed to measure some aspects of personality in the domestic dog (Canis familiaris). Adults and dogs (16 female, 23 male) consisted of various breeds ranging from 6 to 135 pounds. The weights of the dogs ranged from 7 to 135 pounds (Mdog = 50.68, SD = 27.73). Participants and subjects using steroids were not included in the study. All procedures were in accordance with the regulations set forth by the Institutional Review Board and the Institutional Animal Care and Use Committee at the University of Nebraska Medical Center.

Methods

Participants

39 human-dog dyads participated in this study. Human participants (28 female, 11 male) were recruited through flyers posted online as well as by word of mouth. Dogs (16 female, 23 male) consisted of various breeds ranging from 6 months to 12 years of age (Mdog = 5.52 years, SD = 3.27). They were first acquired most predominantly through rescues (39.5%), breeders (36.8%), and shelters (15.8%), but also from puppy mills or flea markets (7.9%).

Results

Hormonal Synchronization between Dogs and Owners

Figure 1. After accounting for the effects of dog’s sex, age, number of other dogs in the household, and time spent alone that day, owners’ cortisol levels explained a significant amount (13%) of the variance in dogs’ cortisol levels. As shown above, higher cortisol levels among owners predicted higher cortisol levels in their dogs, $\Delta R^2 = 0.15$, $\Delta F(1,27) = 5.87$, $p = .022$.

Table 1. Correlations of personality traits of dogs and their owners.

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<th>Trait</th>
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<th>Responsibility</th>
<th>Cooperativeness</th>
<th>Trustworthiness</th>
<th>Controllability</th>
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</tbody>
</table>

Conclusions

Although a few studies have recognized the occurrence of hormonal synchronization between species, this is the first study of its kind, to our knowledge, that has investigated the hormonal synchronization of dogs and their human counterparts in the home environment.6,7

Our hypothesis was supported, such that general cortisol levels throughout the day were positively associated between owners and their dogs (see Figure 1). However, it remains unclear why this relationship exists, as reported stress levels and social interactions were not found to be associated with cortisol levels in humans or dogs.

Synchronized dyads scored higher attachment ratings than desynchronized dyads on the Dog-Owner Relationship Questionnaire, suggesting owners who perceived themselves to be more attached to their dogs may show a greater level of hormonal synchronization (see Figure 2).

Dogs from desynchronized dyads were acquired at a later age than dogs from synchronized dyads (Figure 3), perhaps indicating that socialization with their owner from a young age may play a role in hormonal synchronization.

Dogs in synchronized dyads were reported by their owners to respond more to praise (Figure 4), which may suggest different behavioral characteristics of dogs may facilitate hormonal synchronization with their owners.

Owners reported similar personality traits between themselves and their dogs (Table 1), though these factors were unrelated to their cortisol levels.

This explorative study supports the concept of hormonal synchronization found in humans and dogs within the home environment, and sheds light on the close bond we share with one another.

To build on these findings, future studies could possibly look into how outside factors affect hormonal synchronization. For example, the bond between therapy dogs specifically and their owners could be studied to see if there is a higher level of synchronicity. Additionally, it could be investigated if dogs with lower levels of hormonal synchronization with their owners are at a higher risk of being surrendered to shelters.

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References