Association Between The Lateralization and Aggression/Fear in Canines

By Livy Bergstein
Key Terms

- **Temperament tests:** evaluate the level of fearfulness, aggressiveness, and compatibility (Ledger and Baxter, 1997; Svartberg, 2007; Taylor and Mills, 2006)
- **Lateralization:** localization of function or activity on one side of the body in preference to the other (Merriam-Webster)
- **Handedness:** a tendency to use one hand rather than the other (Merriam-Webster)
Review of Literature

- Temperament tests:
  - Help predict what the behavior of the dogs will be later in life (Goddard and Beilharz, 1984, 1986)
  - help place the dogs with families that would best suit them

- Genetic, cognitive, and environmental factors determine the cause of behavioral patterns (Krueger and Johnson, 2008)
Review of Literature

- The left side of the brain = right side of body and positive feelings  
  (UMSED, 2011)

- The right side of the brain = left side of the body and negative feelings  (UMSED, 2011)
Review of Literature

https://retrieverman.net/2012/07/05/the-problem-with-the-claims-about-brain-size-and-the-dog-domestication/

http://humananatomychart.us
# Review of Literature

- Humans possess 12 million olfactory receptor cells, while dogs have between one and four billion cells (Berns, 2012)

- The brain regions that become active in anticipation of a reward in humans also light up in dog brains when they receive a treat (Berns, 2012)

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**Key Terms**

- ROL
- Research Question
- Hypothesis
- Methods
- Results
- Discussion
- Conclusion

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https://www.reddit.com/r/rarepuppers/comments/6o04kz/heckin_smart_doggos/  
Research Question

Research Gap: Researchers have yet to find out if a dog’s lateralization is associated with their behavior.

Research Question: How does dog behavior correlate with their handedness?

https://www.humanewatch.org/category/pets/page/14/
Hypothesis

- **Hypothesis**: If a dog is fearful, anxious, or aggressive, then it will be left pawed

- **Hypothesis**: There is no correlation between lateralization and behavior

Methods

- Match Up Two: Temperament test
  - On a scale from 0-36
  - Fake cat and a dog are presented
  - Based off of their behavior (shaking, panting, cowering, hiding)
Methods

- Paw Shake Test
- Walk Test
- Kong Test

https://www.wikihow.com/Temperament-Test-a-Dog
Results

![Chart showing data for Right Pawed]

- **Fearful**
- **Aggressive**

The chart displays data for 'Right Pawed' with categories for Fearful and Aggressive behaviors.
Results

![Chart showing behavioral responses](chart.png)
Results: 2 Sample T-Test

H₀: \( \mu = 0 \)
Hₐ: \( \mu > 0 \)
\( \mu = \mu_{\text{Left}} - \mu_{\text{Right}} \)
\( t = \frac{\bar{x}_L - \bar{x}_R}{s.d.} \)

Fearfulness Levels
\( t = 8.553293121 \)
\( p = 5.4728742 \times 10^{-8} \)
\( df = 17.63400002 \)
\( \bar{x}_L = 11.53 \)
\( \bar{x}_R = 1.928571429 \)

Aggressiveness Levels
\( t = 1.374849956 \)
\( p = .0916805488 \)
\( df = 21.46466735 \)
\( \bar{x}_L = 3.13 \)
\( \bar{x}_R = 1.857142857 \)
## Discussion

- **Limitation:** Mainly American Staffords and Pitbulls were be tested
- **Scientists have a better understanding of the body/brain connection**
- **Help scientists gain insight into dogs’ emotions (London, 2014)**

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### Links
- [Critter Consulting](http://critterconsulting.com/info/?p=3299)
- [Kong Company](https://www.kongcompany.com/2014/02/11/a-healthy-smile-for-a-healthy-life/)
- [Zoo Plus](https://blog.zooplus.co.uk/2012/09/20/kong-dog-toys-for-dog-behaviour/)
Discussion

- Risk: Body parts placed within cage
- All procedures were conducted behind bars
- Disabilities such as arthritis
Future Research:

- Look further into different breeds’ dominant paws based off a different temperament
- Whether left pawed dogs would be less likely to be a guiding eye dog  (Newby, 2012)
- Do dogs in a shelter sleep counterclockwise or clockwise (Houpt, 2016)
Conclusion

- Hypothesis is proven correct
- Left paw dogs are more aggressive or timid than right pawed dogs
- This does not mean that one should not adopt left pawed dogs!!
Acknowledgement

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- Cornell University College of Veterinary Medicine
- 1963: University of Pennsylvania, VMD
- 1972: University of Pennsylvania, PhD in Behavioral Psychology
Bibliography

- Dictionary: Search the Merriam-Webster dictionary first. Here's why... (n.d.).


Pet Place Staff, 2015. Is your dog right or left pawed?. Pet Place, petplace.com
• UCMAS. Left brain Vs right brain. 2011. Ucmas.ca
• Willson, E., Sundgren, P.E., 1997. The use of a behavior test for the selection of dogs for service and breeding, I: method of testing and evaluating test results in the adult dog, demands on different kinds of service dogs, sex and breed differences.