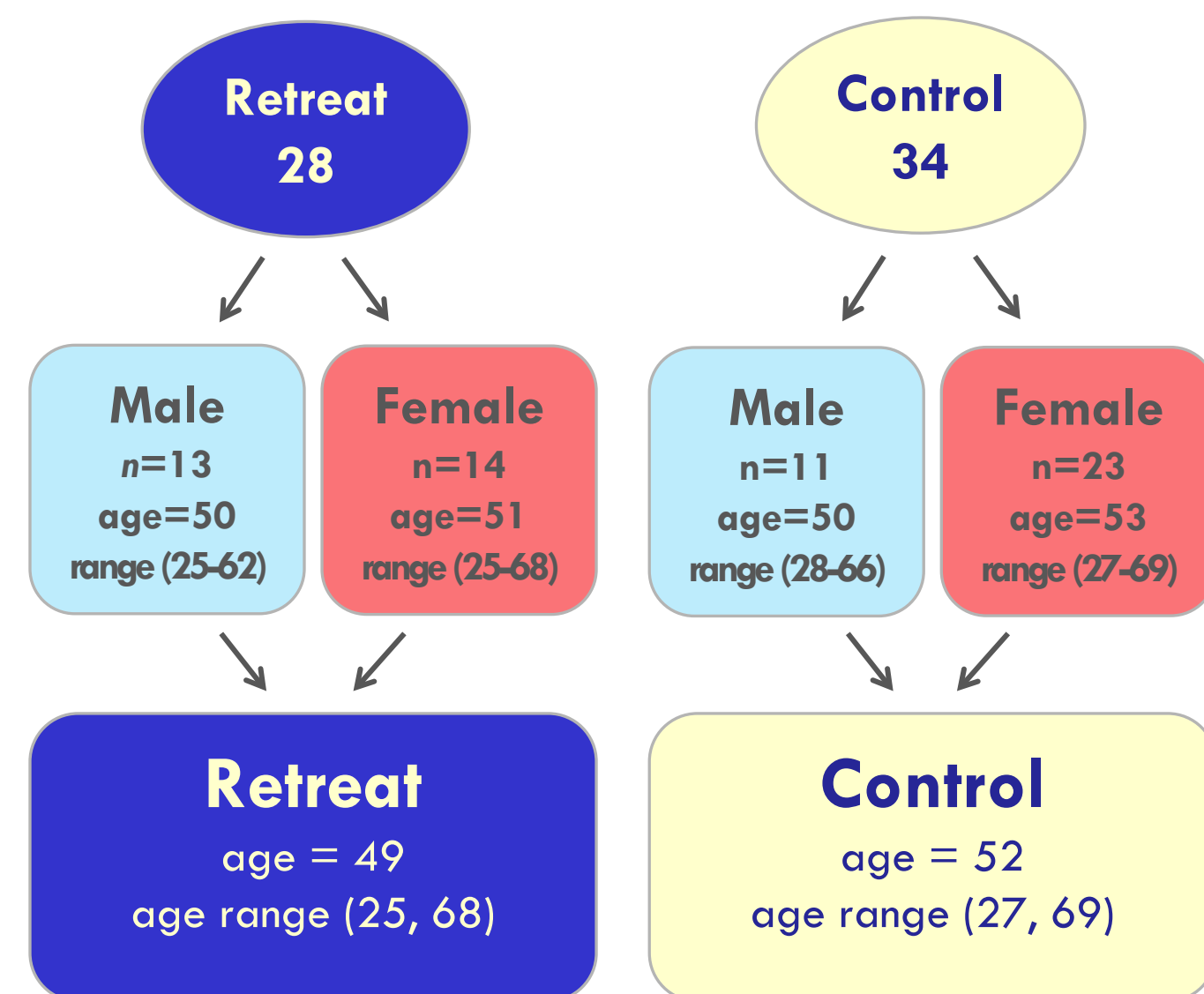


## #27

We examined relations between measures of telomere biology, BDNF, and meditation experience in participants of a 1-month Insight meditation retreat.

**Retreatants participants**  
were recruited from the  
pool of individuals  
registered for month-long,  
silent, residential retreats  
at Spirit Rock Meditation  
Center (Woodacre, CA),  
and were assessed the  
morning following their  
first full day of silence,  
and again 3 weeks later.

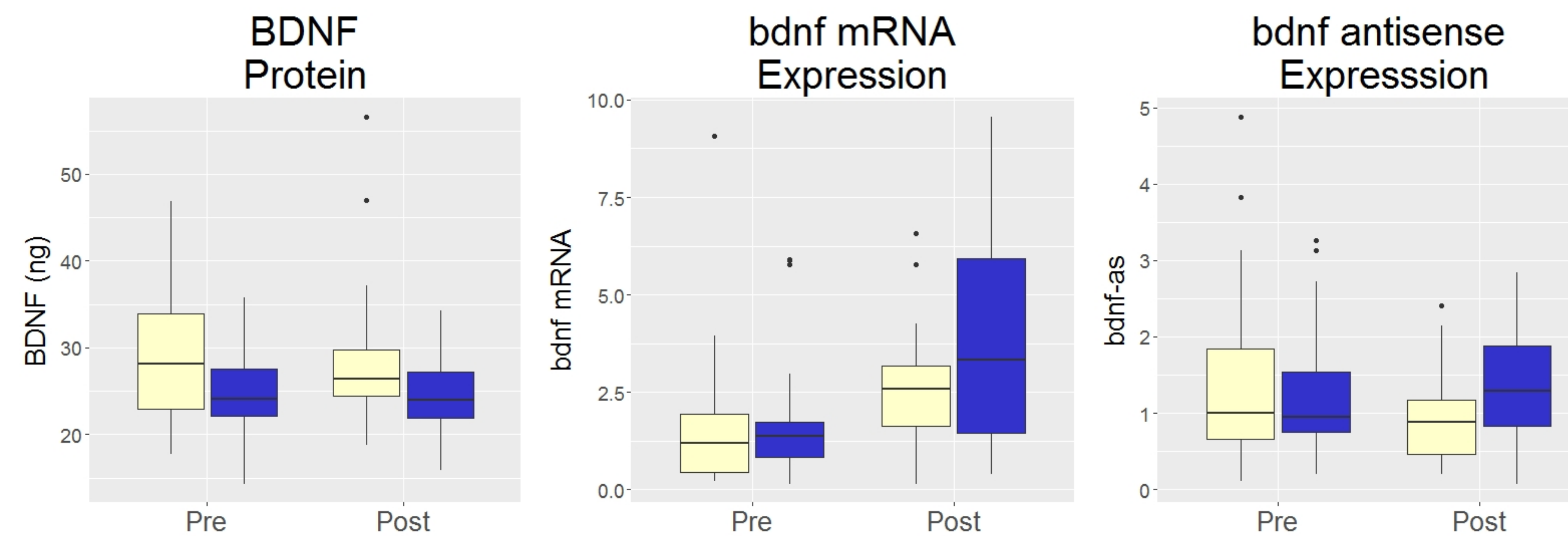


**Controls** were similar in age, gender, and prior meditation experience and had previously attended at least two 5-10 day meditation retreats. They were assessed at a separate retreat center at the beginning and end of a 3-week interval and engaged in their normal daily lives for the duration of study.

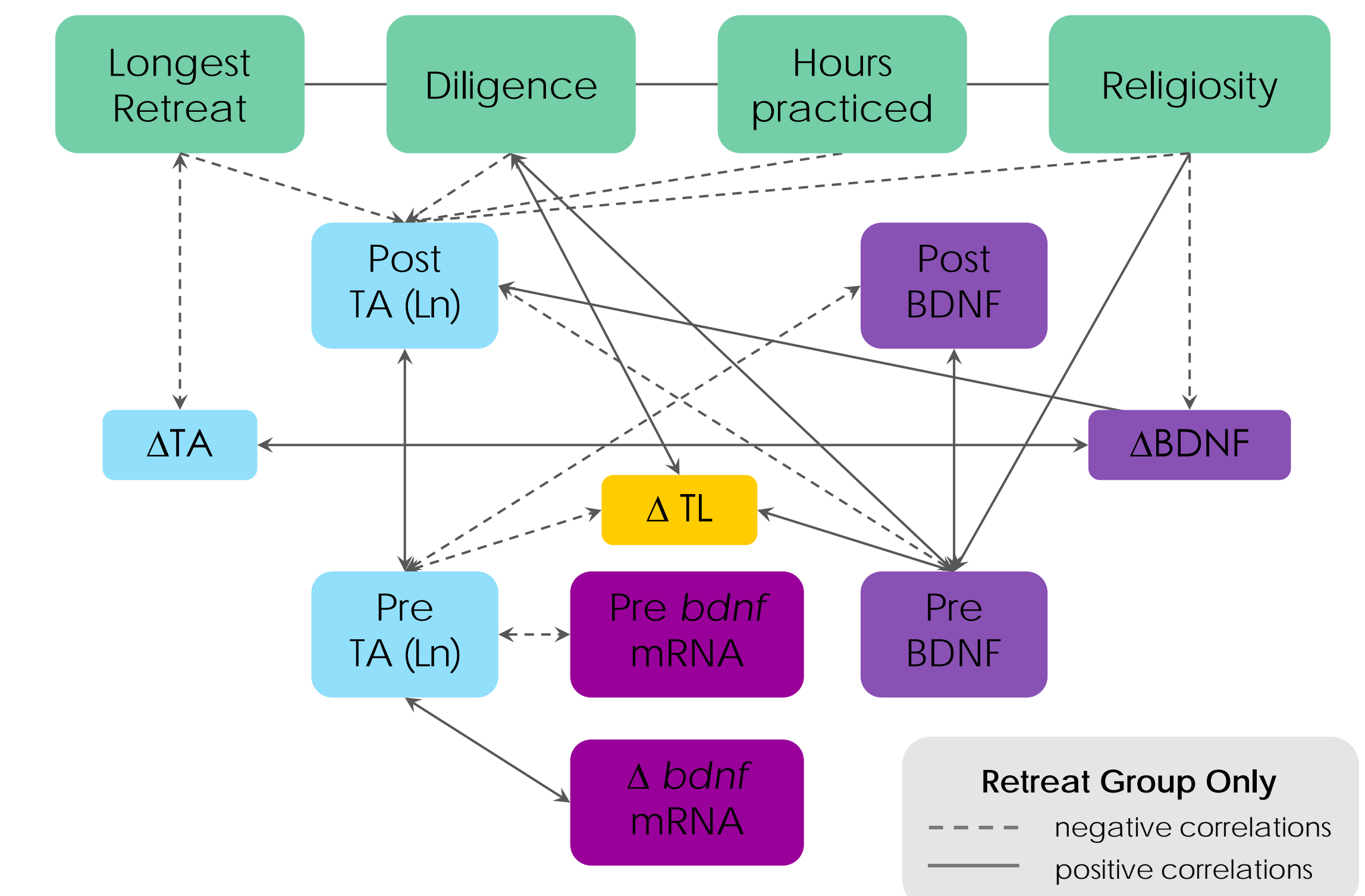
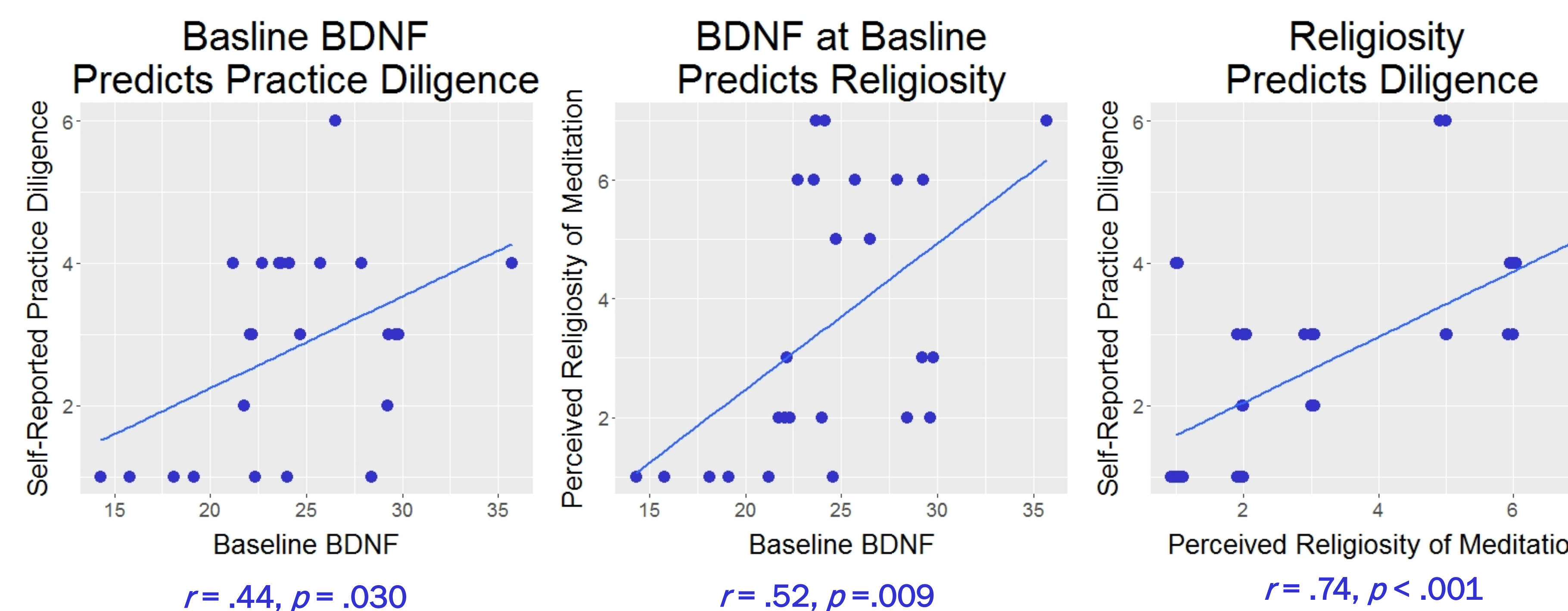
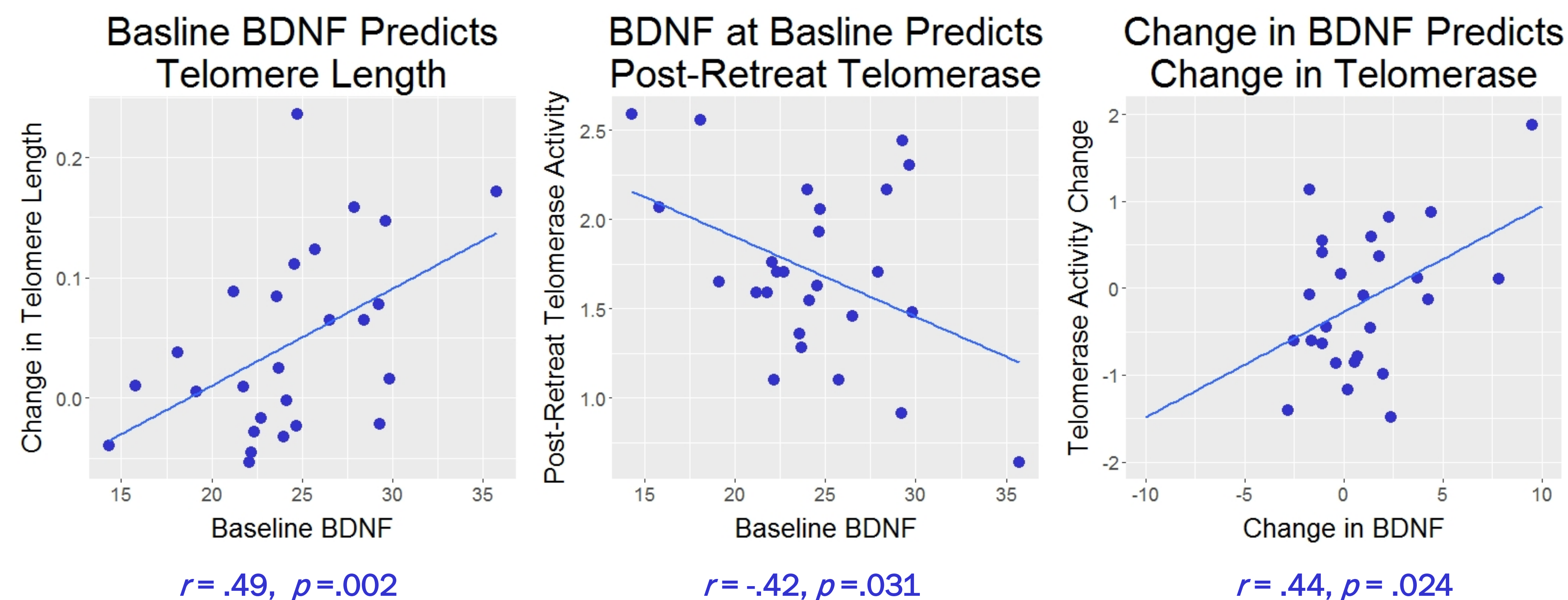
**Blood Collection:** Fasting blood was collected by professional phlebotomists and transported to a field lab for processing. PBMCs and sera were purified from whole blood, then stored and shipped to collaborating labs at -80°C for assay.

**Telomere Length** and **Telomerase Activity** were assayed at UCSF by JL. Total genomic DNA was purified from PBMCs using QIAamp® DNA Mini kit and assayed using the PCR method adapted from Cawthon<sup>3</sup>. Telomerase activity was assayed according to the TRAPeze kit manual and visualized on a 8% polyacrylamide-8M urea sequencing gel.

**BDNF** was assayed with the Human Free BDNF Immunoassay kit per manufacturer's instructions (R&D) at UCSF (lab of SHM).



There were no retreat-related changes in BDNF protein levels or in levels of *bdnf* or *bdnf-as* gene expression



We found no mean level change in BDNF; however, participants' initial BDNF levels predicted retreat-related changes in telomere length and post-retreat levels of telomerase activity, suggesting that BDNF may play a role in retreat-related improvements in immune cell aging.

Additionally, though there were no mean level changes in telomerase activity or BDNF, individual changes in BDNF were positively related to individual changes in telomerase activity, further indicating that BDNF may play a role in facilitating telomere maintenance.

We also found that baseline BDNF levels were related to the degree to which participants consider meditation to be a religious practice, and how diligently they thought they had practiced in relation to their peers while on retreat. Diligence further predicted changes in telomere length<sup>1</sup>.

In the diagram above, we've begun to map these and other correlations, with the ultimate goal of using mediation models to clarify these relationships.

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