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***Impact of bedding material on tactile behavioral phenotypes of a Camk2a E183V mutant mouse model of ASD***

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**Introduction:** Impaired social communication and restricted behaviors are primary hallmarks of autism spectrum disorder (ASD). However, individuals with ASD also display abnormal tactile sensitivity and responses to sensory inputs, but underlying molecular mechanisms are poorly understood. Here, we assessed tactile phenotypes of an ASD mouse model with a Glu-183 to Val CaMKII $\alpha$  catalytic domain mutation (E183V-KI mice) which display abnormal social and motor behaviors<sup>1</sup>. The impact of raising mice in cages with cob or paper bedding was assessed.

**Methods:** The von Frey filament (VFF) test was used to assess tactile sensitivity. In addition, tactile discrimination was then assessed using three tests: texture preference (TP) test, sandpaper (SP) test, and textured novel object recognition (tNOR) test

**Results:** First, we found that with the VFF tests, homozygous (HOM) E183V-KI mice were less sensitive to touch compared to wild-type (WT) and heterozygous (HET) mice, and this phenotype was exaggerated in HOM mice raised on cob bedding compared to paper bedding. Second, during the TP test, WT mice, but not HOM mice, raised on cob bedding spent significantly more time exploring a rough cube rather than a smooth cube. However, mice raised on paper bedding had no preference for the rough vs. smooth cubes, independent of genotype. Third, during the first 10 min. of the SP test (duration of the TP test), WT mice raised on either paper and cob bedding spent more time in the rough floor zone. HET and HOM mice raised on cob bedding retained a significant preference for the rough floor zone, but HET and HOM mice raised on paper bedding spent equal amounts of time in the rough and smooth floor zones. However, the zone preference of HOM, but not HET or WT mice, raised on cob bedding was lost during the last 10 min. of the SP test. Lastly, during the tNOR test WT mice, but not HET or HOM mice, raised on cob bedding explore the novel cube more than the familiar cube. However, none of the mice raised on paper bedding discriminated between novel and familiar cubes.

**Discussion:** Taken together our data demonstrates that tactile sensitivity and discrimination is impaired in HOM E183V-KI mice and can be modulated by environmental factors, such as bedding.

**References, if any:** Stephenson et al., 2017. J Neurosci. 37(8): 2216, PMC5338762

**Keywords:**

CaMKII alpha, Autism spectrum disorders, Tactile