Results: DLMO phase was determined with a 4pg/ml threshold for 11 children. DLMO phases (mtime=21:46±68 min) and average bedtimes (mtime=20:40±88min) were positively correlated (r=.87). Challenges identified for missed DLMOs included: one child supervised by a teenaged sibling (not CG); one child/CG identified as potentially uncooperative. The other two "misses" likely arose from low saliva quantity, inconsistencies with staff training, and inadequate description of requirements for wearing glasses. Procedure modifications included strategies tailored to families' needs, experiences, and home environment that can challenge adherence to protocol, greater emphasis on wearing glasses, and cartoon reminder card and scales added to kit. Subsequent samples were successful.
Conclusion: Our approach was effective for determining DLMO phase in children using a remote approach with careful application of methods.
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IRIS COLOR PREDICTS MELANOPSIN-DRIVEN RETINAL RESPONSES IN OLDER BUT NOT YOUNGER INDIVIDUALS

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Introduction: The retina contains melanopsin-containing retinal ganglion cells, which underlie non-image forming responses to light. The Post-Illumination Pupil Response (PIPR) can assess melanopsin cell responsivity, with applications for sleep disorders, mood disorders, and circadian entrainment. Lighter pigmented irises allow more light to pass through the retina. The present study tested an association between the PIPR and iris pigmentation.
Methods: Participants (N=49) included seasonal depression (n=26) and never-depressed controls (n=23). Photos of participants' irises were rated using both the Franssen (2008) scale, a set of 24 standardized iris photos, and the Mackey (2011) scale, a 9-category rating system. Red and blue stimuli 13.5 log photons/cm2/s were presented, and infrared pupillometry measured pupil diameter for 40 seconds. We used multilevel regression with a random intercept of participant to predict the PIPR from each iris rating system separately, controlling for age, gender, and circadian time of testing determined from Dim Light Melatonin Onset.
Results: Agreement between raters, calculated using Cohen's κ, was moderate for both scales (Franssen, κ=0.57, 95% CI: 0.42 to 0.71, p<0.001; Mackey, κ=0.67, 95% CI: 0.53 to 0.81, p<0.001). Bivariate correlations showed age was inversely associated with iris color: older individuals had lighter iris pigmentation. Analyses were therefore stratified by age (older >=31 years: n=24; younger <31 years, n=25). Greater retinal responsivity was associated with lighter iris pigmentation in the older sample (Mackey: unstandardized b=-0.016; SE=0.005; p=0.002; Franssen: unstandardized b=-0.006; SE=0.002, p=0.002), but not the younger sample (Mackey: unstandardized b=-0.0008; SE=0.003; p=0.770; Franssen: unstandardized b=-0.0009; SE=0.002, p=0.619). There was no effect of iris color on PIPR in the whole sample (p's >0.13).
Conclusion: Iris color explained ~8% of variance in the PIPR, indicating that PIPR studies should recruit samples with similar distributions of iris pigmentation across conditions and ages, as this finding was only seen in the older sample with more individuals with lighter iris pigmentation. Future studies will test iris pigmentation by light exposure interactions on the PIPR. Light stimuli focused to a point on the pupil (i.e., Maxwellian) would eliminate variation in the amount of light incident on the retina due to iris pigmentation.
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