Differences in Skin Aging Characteristics in Women of East Asian vs European Descent Residing in the Same Geographic Location

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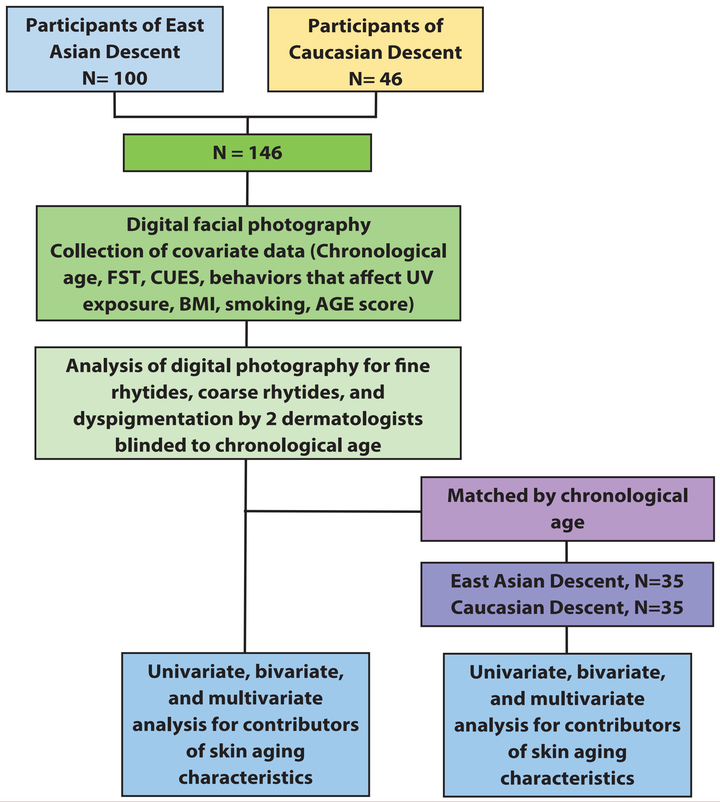
BACKGROUND

Previous studies have shown that genetics play an important role in the appearance of skin aging. For instance, European individuals are more likely to have fine and coarse wrinkling and a rough skin texture, while East Asian individuals are more likely to have pigmentary changes. In spite of these general findings, past studies did not rigorously control for extrinsic factors such as ultraviolet burden and geographic locale, making it difficult to disentangle the relative contributions of intrinsic and extrinsic pathways to the overall aged phenotype.

OBJECTIVES

1) To investigate clinically visible differences in skin aging parameters between two genetically distinct populations residing in the same geographic locale.
2) To understand the relative contributions of genetic (intrinsic) factors and environmental (extrinsic) factors on skin aging.

METHODS



RESULTS

Table 1. Multivariate associations of fine rhytides.

	Unmatched			Age- Matched		
Variable	Linear regression coefficient (95% CI)	p	Adjusted R^2	Linear regression coefficient (95% CI)	p	Adjusted R^2
Caucasian descent	0.77 (0.33 – 1.21)	0.0007		0.61 (0.11 – 1.11)	0.02	
Age, years	0.06 (0.03 – 0.09)	<.0001		0.02 (-0.02 – 0.06)	0.4	
Weight	0.08 (-0.23 – 0.39)	0.6		-0.02 (-0.44 – 0.39)	0.9	
Positive smoking history	-0.02 (-0.39 – 0.34)	0.9		-0.09 (-0.54 – 0.36)	0.7	
Lifetime UV exposure (by ln(CUES)), quartile						
2nd vs 1st	-0.2 (-0.59 – 0.19)	0.3		0.1 (-0.47 – 0.67)	0.7	
3rd vs 1st	0.02 (-0.38 – 0.41)	0.9	0.3577	-0.03 (-0.54 – 0.47)	0.9	0.2786
4th vs 1st	0.03 (-0.42 – 0.49)	0.9		0.28 (-0.27 – 0.82)	0.3	
Blistering sunburns						
1-5 vs 0	-0.02 (-0.35 – 0.31)	0.9		0.05 (-0.4 – 0.49)	0.8	
6-10 vs 0	-0.22 (-0.81 – 0.37)	0.5		-0.16 (-0.78 – 0.45)	0.6	
11+ vs 0	0.43 (-0.16 – 1.02)	0.1		0.53 (-0.18 – 1.23)	0.1	
Composite Sun Protective Behavior*						
9-12 vs 2-8	-0.002 (-0.35 – 0.35)	1		0.19 (-0.25 – 0.64)	0.4	
13-16 vs 2-8	-0.17 (-0.56 – 0.22)	0.4		-0.13 (-0.64 – 0.37)	0.6	

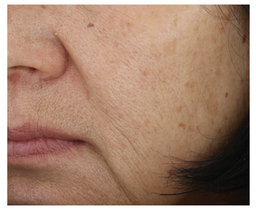
*Composite Sun Protective Behavior includes a sum of all sun protective behavior scores which includes sun screen usage, wearing long sleeves, wearing hats, and seeking shade.

Table 2. Multivariate associations of coarse rhytides.

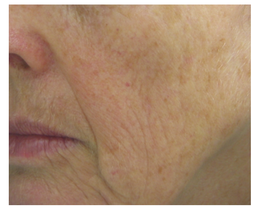
	Unmatched			Age- Matched		
Variable	Linear regression coefficient (95% CI)	p	Adjusted R^2	Linear regression coefficient (95% CI)	p	Adjusted R^2
Caucasian descent	0.57 (0.27 – 0.87)	0.0002		0.64 (0.22 –1.07)	0.004	
Age, years	0.03 (0.01 – 0.05)	0.0007		0.04 (0.01 – 0.08)	0.01	
BMI	0 (-0.21 – 0.22)	1		0.09 (-0.26 – 0.44)	0.6	
Positive smoking history	-0.08 (-0.34 – 0.17)	0.5		-0.43 (-0.81 – -0.05)	0.03	
Lifetime UV exposure (by ln(CUES)), quartile						
2nd vs 1st	0.04 (-0.23 – 0.31)	0.8		0.19 (-0.29 – 0.67)	0.4	
3rd vs 1st	0.03 (-0.24 – 0.3)	0.8		0.43 (0.004 – 0.86)	0.05	
4th vs 1st	0.11 (-0.2 – 0.42)	0.5	0.3743	0.34 (-0.13 – 0.8)	0.2	0.3847
Blistering sunburns						
1-5 vs 0	0.09 (-0.14 – 0.31)	0.4		0.06 (-0.32 – 0.44)	0.7	
6-10 vs 0	0.33 (-0.08 – 0.73)	0.1		0.47 (-0.05 – 1)	0.08	
11+ vs 0	0.5 (0.1 – 0.9)	0.02		0.48 (-0.12 – 1.08)	0.1	
Composite Sun Protective Behavior*						
9-12 vs 2-8	0.13 (-0.11 – 0.37)	0.3		-0.15 (-0.53 – 0.22)	0.4	
13-16 vs 2-8	0.08 (-0.18 – 0.35)	0.5		-0.01 (-0.44 - 0.42)	1	

*Composite Sun Protective Behavior includes a sum of all sun protective behavior scores which includes sun screen usage, wearing long sleeves, wearing hats, and seeking shade.

SAMPLE AGE-MATCHED PAIR



Asian Descent
Age: 70
Fine Rhytide Score: 1
Coarse Rhytide Score: 0
Dyspigmentation Score: 2



Caucasian Descent
Age: 70
Fine Rhytide Score: 1
Coarse Rhytide Score: 2
Dyspigmentation Score: 3

DISCUSSION AND CONCLUSION

In this study, we demonstrate a fully adjusted multivariate linear regression models showing a strong association between Caucasian race and fine rhytides independent of other extrinsic risk factors.

This suggests that:

1) There are differential pathways of skin aging in different ethnic groups

2) Those of Caucasian descent demonstrate increased likelihood of developing fine rhytides when compared to those of Asian descent.

3) This introduces a role for more personalized therapies to reverse skin aging.

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