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Supplemental Material

Associations between Personal Care Product Use Patterns and Breast Cancer Risk among White and Black Women in the Sister Study

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Table S1. Full list of products assessed in questionnaire for each personal care product type (beauty, hair, and skin) with those remaining in analysis noted.

Beauty (14)	Hair (15)	Skin (19)
Mascara[a]	Shampoo[a]	Cleansing cream[a]
Eyeshadow[a]	Conditioner[a]	Face cream
Eyeliner[a]	Hair spray[a]	Face mask
Lip moisturizer	Hair gel[a]	Shaving cream
Lip stick[a]	Pomade[a]	Anti-aging cream[a]
Foundation[a]	Hair dye-permanent	Age spot remover
Blush[a]	Hair dye-semi permanent	Self-tanner
Makeup remover[a]	Hair highlighter	Baby oil
Nail polish[a]	Hair straightener[a]	Petroleum Jelly[a]
Nail polish remover	Hair color rinse	Body lotion[a]
Artificial nails	Hair food	Hand lotion[a]
Artificial nails (other)	Hair bleach	Foot cream[a]
Perfume[a]	Hair perm	Deodorant
Cuticle cream	Rogaine	Talcum underarms[a]
	Hair straightener (other)	Talcum other[a]
		Talcum vaginal
		Bath gel
		Skin lightener
		Blemish cream

[a]Personal care products used in latent class analyses

Table S2. Hazard ratios (HRs) and 95% confidence intervals (CIs) for the association between latent classes and breast cancer risk by ER status among post-menopausal white women

Beauty Classes	Person-years	Post-menopausal BC Events	adjHR (95% CI)[a]	ER+ Events [b]	adjHR (95% CI)[a]	ER- Events [b]	adjHR (95% CI)[a]
Infrequent user	53247	372	1	282	1	41	1
Moderate user	84289	631	1.16 (1.12, 1.19)	446	1.05 (0.90, 1.23)	74	1.03 (0.69, 1.54)
Frequent user	90181	656	1.18 (1.14, 1.21)	505	1.10 (0.94, 1.28)	57	0.72 (0.47, 1.10)
Totals[c]	227717	1659		1248		172	
Hair Classes							
Infrequent users of hair spray	115014	841	1	617	1	89	1
Moderate users of pomade, hair straightener, hair spray, and conditioner	7190	56	0.76 (0.71, 0.81)	43	0.90 (0.65, 1.25)	5	0.98 (0.39, 2.44)
Frequent users of hair spray and hair gel	103825	757	1.03 (1.01, 1.06)	571	0.84 (0.75, 0.94)	77	0.86 (0.63, 1.18)
Totals[c]	226029	1654		1248		172	
Skincare Classes							
Infrequent user	43793	324	1	239	1	34	1
Moderate user	101807	721	1.08 (1.05, 1.12)	537	1.09 (0.93, 1.28)	68	0.85 (0.56, 1.30)
Frequent user	52621	420	1.12 (1.09, 1.16)	311	1.07 (0.90, 1.28)	52	1.07 (0.68, 1.67)
Talcum powder user	29453	195	1.03 (0.99, 1.07)	148	1.00 (0.81, 1.24)	17	0.80 (0.44, 1.44)
Totals[c]	227674	1660		1248		172	

[a] adjusted for age, parity, age at first live birth, duration of breastfeeding, adult BMI, alcohol use, oral contraceptive use, post-menopausal hormone therapy use, education
[b] ER status was available for 85% (N=1,420) of white women with a post-menopausal diagnosis of breast cancer
[c] Total numbers of BC events and person-years are for women with complete data for each product class; after accounting for missing data, total numbers of person-years for white women with a post-menopausal diagnosis of breast cancer were 230,023 and total number of BC Events were 1,679; did not report results if <20 BC events
Abbreviations: BC, breast cancer; +, positive; -, negative; 95% CI, 95% confidence interval; BMI, body mass index; ER, estrogen receptor; HR, hazard ratio

Table S3. Hazard ratios (HRs) and 95% confidence intervals (CIs) for the association between latent classes and breast cancer risk, stratified by in situ or invasive events, among post-menopausal women white women

Beauty Classes	Person-years	Post-menopausal BC Events [a]	adjHR (95% CI)[b]	In situ events[c]	adjHR (95% CI)[b]	Invasive events[c]	adjHR (95% CI)[b]
Infrequent user	53247	372	1	62	1	266	1
Moderate user	84289	631	1.16 (1.12, 1.19)	132	1.41 (1.06, 1.89)	396	1.09 (0.94, 1.27)
Frequent user	90181	656	1.18 (1.14, 1.21)	132	1.38 (1.03, 1.85)	429	1.13 (0.97, 1.32)
Totals	227717	1659		326		1091	
Hair Classes							
Infrequent users of hair spray	115014	841	1	163	1	545	1
Moderate users of pomade, hair straightener, hair spray, and conditioner	7190	56	0.76 (0.71, 0.81)	9	0.73 (0.37, 1.43)	43	0.94 (0.69, 1.29)
Frequent users of hair spray and hair gel	103825	757	1.03 (1.01, 1.06)	153	1.07 (0.87, 1.31)	499	1.01 (0.90, 1.13)
Totals	226029	1654		325		1087	
Skincare Classes							
Infrequent user	43793	324	1	52	1	226	1
Moderate user	101807	721	1.08 (1.05, 1.12)	155	1.30 (0.97, 1.76)	456	0.97 (0.83, 1.13)
Frequent user	52621	420	1.12 (1.09, 1.16)	87	1.38 (1.00, 1.92)	275	1.11 (0.94, 1.31)
Talcum powder user	29453	195	1.03 (0.99, 1.07)	32	0.94 (0.62, 1.42)	134	0.95 (0.78, 1.17)
Totals	227674	1660		326		1091	

[a] Total numbers of BC events and person-years are for women with complete data for each product class only; after accounting for missing data, total numbers of person-years for white women with a post-menopausal diagnosis of breast cancer were 230,023 and total number of BC Events were 1,679

[b] adjusted for age, parity, age at first live birth, duration of breastfeeding, adult BMI, alcohol use, oral contraceptive use, post-menopausal hormone therapy use, education
[c] Breast cancer subtype (invasive or in situ) was available for 84% (N=1,417) of white women with a post- menopausal diagnosis of breast cancer
Abbreviations: BC, breast cancer +, positive; -, negative; 95% CI, 95% confidence interval; BMI, body mass index; ER, estrogen receptor; HR, hazard ratio
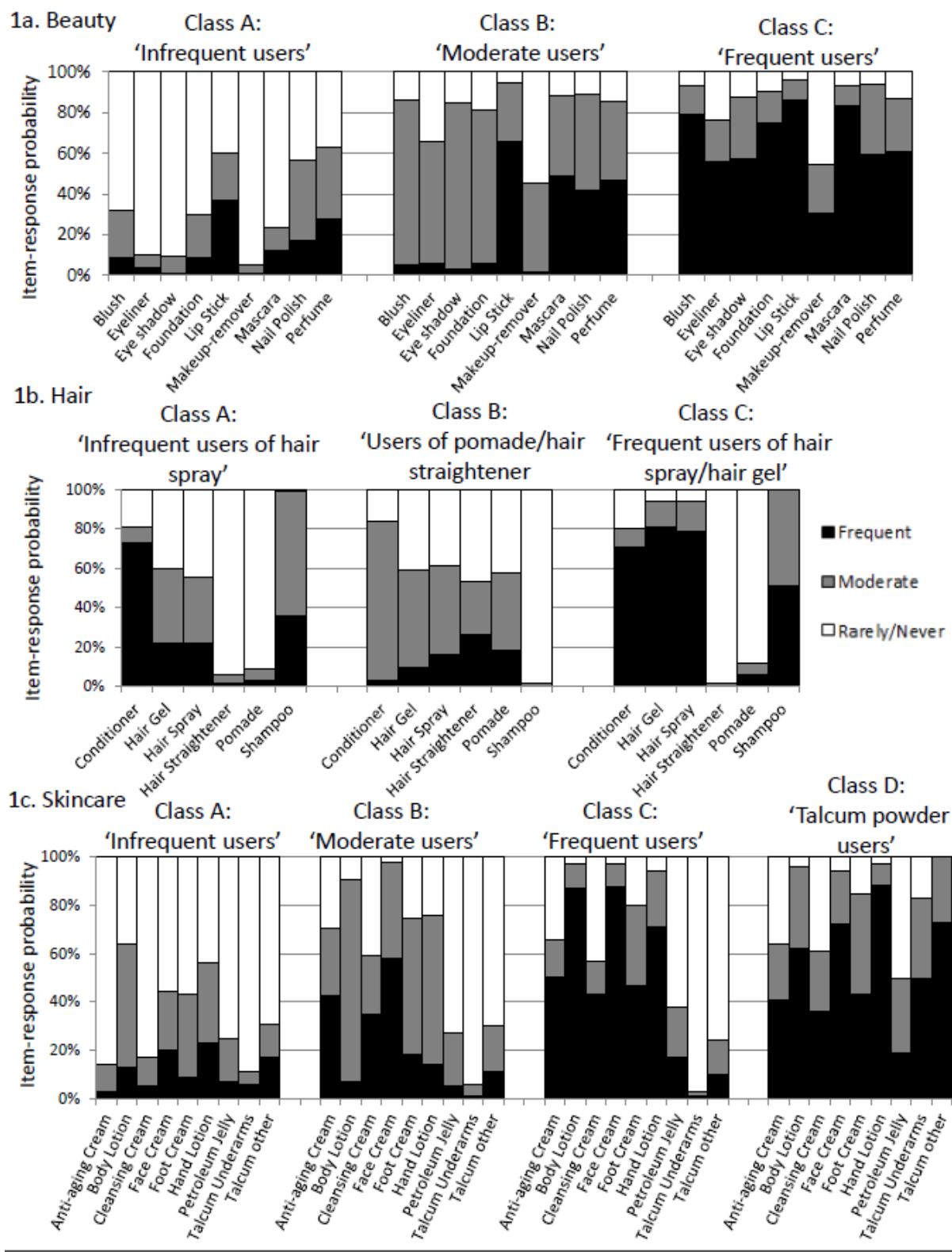
Figure S1. Item-response probability conditional on class membership