

Schrödinger's phenotypes: herbarium specimens show bidimensional images are both good and (not so) bad sources of morphological data

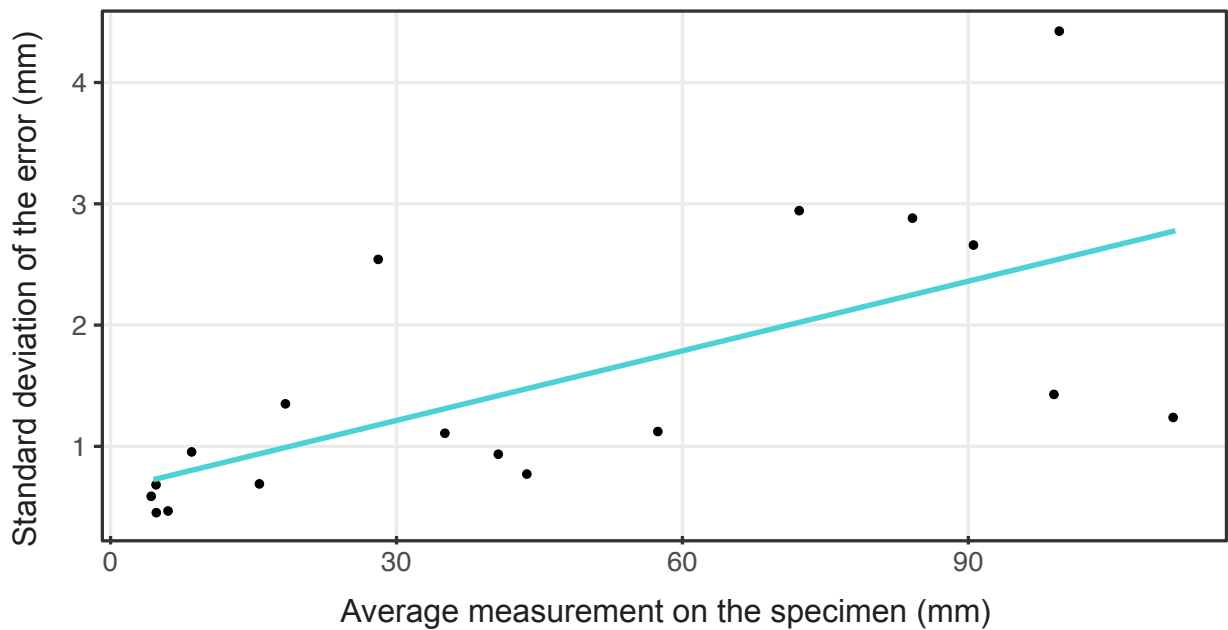


Figure 1: Relationship between the standard deviation of the error of the measurements (i.e., the difference between image and specimen measurements) and the magnitude of each variable. Each dot represents a different variable from the measurement dataset.

Table 1: Mean PCA similarity (Sim) and mean accuracy in estimating the first four components (PC1, ..., PC4) using images instead of specimen. This is the data plotted in Figure ??.

dataset	group	type	mean	dataset	group	type	mean	dataset	group	type	mean
A2013	PC1	NM	0.89	B2015	PC2	N	0.98	M1992	PC4	M	0.81
A2013	PC1	M	0.89	B2015	PC3	NM	0.45	M1992	PC4	N	0.19
A2013	PC1	N	0.99	B2015	PC3	M	0.67	M1992	Sim	NM	0.94
A2013	PC2	NM	0.69	B2015	PC3	N	0.74	M1992	Sim	M	0.95
A2013	PC2	M	0.72	B2015	PC4	NM	0.39	M1992	Sim	N	0.98
A2013	PC2	N	0.99	B2015	PC4	M	0.56	P2005	PC1	NM	0.95
A2013	PC3	NM	0.66	B2015	PC4	N	0.77	P2005	PC1	M	0.95
A2013	PC3	M	0.70	B2015	Sim	NM	0.96	P2005	PC1	N	0.99
A2013	PC3	N	0.96	B2015	Sim	M	0.98	P2005	PC2	NM	0.35
A2013	PC4	NM	0.33	B2015	Sim	N	0.99	P2005	PC2	M	0.53
A2013	PC4	M	0.37	E2015	PC1	NM	0.96	P2005	PC2	N	0.81
A2013	PC4	N	0.69	E2015	PC1	M	1.00	P2005	PC3	NM	0.23
A2013	Sim	NM	0.90	E2015	PC1	N	0.96	P2005	PC3	M	0.25
A2013	Sim	M	0.93	E2015	PC2	NM	0.96	P2005	PC3	N	0.86
A2013	Sim	N	0.99	E2015	PC2	M	1.00	P2005	PC4	NM	0.17
A2008	PC1	NM	0.60	E2015	PC2	N	0.96	P2005	PC4	M	0.22
A2008	PC1	M	0.69	E2015	PC3	NM	0.59	P2005	PC4	N	0.98
A2008	PC1	N	1.00	E2015	PC3	M	1.00	P2005	Sim	NM	0.78
A2008	PC2	NM	0.64	E2015	PC3	N	0.56	P2005	Sim	M	0.83
A2008	PC2	M	0.74	E2015	PC4	NM	0.52	P2005	Sim	N	0.95
A2008	PC2	N	1.00	E2015	PC4	M	1.00	R2014	PC1	NM	0.77
A2008	PC3	NM	0.22	E2015	PC4	N	0.50	R2014	PC1	M	0.88
A2008	PC3	M	0.23	E2015	Sim	NM	0.98	R2014	PC1	N	0.95
A2008	PC3	N	1.00	E2015	Sim	M	1.00	R2014	PC2	NM	0.67
A2008	PC4	NM	0.22	E2015	Sim	N	0.98	R2014	PC2	M	0.71
A2008	PC4	M	0.25	K2006i	PC1	NM	0.71	R2014	PC2	N	0.96
A2008	PC4	N	0.93	K2006i	PC1	M	0.87	R2014	PC3	NM	0.38
A2008	Sim	NM	0.29	K2006i	PC1	N	0.94	R2014	PC3	M	0.57
A2008	Sim	M	0.30	K2006i	PC2	NM	0.81	R2014	PC3	N	0.50
A2008	Sim	N	0.95	K2006i	PC2	M	0.98	R2014	PC4	NM	0.14
A2009	PC1	NM	0.97	K2006i	PC2	N	0.97	R2014	PC4	M	0.24
A2009	PC1	M	0.97	K2006i	PC3	NM	0.59	R2014	PC4	N	0.46
A2009	PC1	N	1.00	K2006i	PC3	M	0.60	R2014	Sim	NM	0.52
A2009	PC2	NM	0.89	K2006i	PC3	N	0.81	R2014	Sim	M	0.57
A2009	PC2	M	0.90	K2006i	PC4	NM	0.48	R2014	Sim	N	0.91
A2009	PC2	N	1.00	K2006i	PC4	M	0.53	S2012	PC1	NM	0.94
A2009	PC3	NM	0.36	K2006i	PC4	N	0.76	S2012	PC1	M	0.95
A2009	PC3	M	0.38	K2006i	Sim	NM	0.88	S2012	PC1	N	0.98
A2009	PC3	N	1.00	K2006i	Sim	M	0.93	S2012	PC2	NM	0.66
A2009	PC4	NM	0.55	K2006i	Sim	N	0.96	S2012	PC2	M	0.77
A2009	PC4	M	0.60	K2006p	PC1	NM	0.90	S2012	PC2	N	0.94
A2009	PC4	N	1.00	K2006p	PC1	M	0.92	S2012	PC3	NM	0.57
A2009	Sim	NM	0.90	K2006p	PC1	N	0.97	S2012	PC3	M	0.49
A2009	Sim	M	0.90	K2006p	PC2	NM	0.86	S2012	PC3	N	0.97
A2009	Sim	N	1.00	K2006p	PC2	M	0.93	S2012	PC4	NM	0.51
B2018	PC1	NM	0.97	K2006p	PC2	N	0.97	S2012	PC4	M	0.58
B2018	PC1	M	0.99	K2006p	PC3	NM	0.45	S2012	PC4	N	0.74
B2018	PC1	N	0.98	K2006p	PC3	M	0.53	S2012	Sim	NM	0.79
B2018	PC2	NM	0.83	K2006p	PC3	N	0.71	S2012	Sim	M	0.81
B2018	PC2	M	0.96	K2006p	PC4	NM	0.60	S2012	Sim	N	0.97
B2018	PC2	N	0.86	K2006p	PC4	M	0.66	T2008	PC1	NM	1.00
B2018	PC3	NM	0.75	K2006p	PC4	N	0.66	T2008	PC1	M	1.00
B2018	PC3	M	0.94	K2006p	Sim	NM	0.74	T2008	PC1	N	1.00
B2018	PC3	N	0.76	K2006p	Sim	M	0.81	T2008	PC2	NM	0.98
B2018	PC4	NM	0.79	K2006p	Sim	N	0.91	T2008	PC2	M	1.00
B2018	PC4	M	0.87	M1992	PC1	NM	0.99	T2008	PC2	N	0.98
B2018	PC4	N	0.78	M1992	PC1	M	1.00	T2008	PC3	NM	0.98
B2018	Sim	NM	0.75	M1992	PC1	N	0.99	T2008	PC3	M	1.00
B2018	Sim	M	0.82	M1992	PC2	NM	0.76	T2008	PC3	N	0.98
B2018	Sim	N	0.85	M1992	PC2	M	0.92	T2008	PC4	NM	0.98
B2015	PC1	NM	0.77	M1992	PC2	N	0.83	T2008	PC4	M	1.00
B2015	PC1	M	0.88	M1992	PC3	NM	0.68	T2008	PC4	N	0.98
B2015	PC1	N	0.97	M1992	PC3	M	0.90	T2008	Sim	NM	1.00
B2015	PC2	NM	0.86	M1992	PC3	N	0.81	T2008	Sim	M	1.00
B2015	PC2	M	0.97	M1992	PC4	NM	0.38	T2008	Sim	N	1.00