Internet Appendix: Do Alpha Males Deliver Alpha? Facial Width-to-Height Ratio and Hedge Funds

In the Internet Appendix, we provide additional robustness tests to verify the strength of our empirical results.

I. Additional robustness tests

A. Managers who smile broadly in their photos

One concern is that fWHR may be inflated for managers who smile broadly in their photos. We define a broad smile as that which would affect the fWHR calculation by impacting the measurement of face height. To adjust for this, we redo the baseline regressions after removing the 367 managers with such photos. Panel A of Table A1 indicates that our findings are robust to this potential source of measurement error.

B. Hedge funds with only one manager

We redo the baseline regressions for the sample of hedge funds with only one manager. For these funds, fund fWHR equals manager fWHR. Panel B of Table A1 indicates that our findings prevail with this group of funds.

C. Subsample analysis

To test whether the results are robust across subsamples, we split the sample period into two subperiods, i.e., January 1994 to December 2004 and January 2005 to December 2015, and redo the baseline regressions. Panels C and D of Table A1 indicate that while the relation between fWHR and risk-adjusted fund performance is weaker in the later subperiod, it is still economically relevant and statistically significant at the 5% level.

D. Overconfidence

Insofar as high-fWHR managers are more overconfident than are low-fWHR managers, overconfidence (Barber and Odean (2000) and (2001)) may explain our findings. Barber and Odean ((2000) and (2001)) argue that overconfident individuals tend to trade excessively, i.e., trading hurts their performance more. Therefore, to control for overconfidence, we first define *EXCESSIVETRADING* as the difference between the quarterly performance of a hedge fund firm had the firm not traded since the start of the year and the firm's actual quarterly performance based on 13F long-only holdings. Next, we redo our baseline regressions after controlling for *EXCESSIVETRADING* averaged over the last four quarters. Panel E of Table A1 shows that overconfidence does not explain our findings.

E. Limited attention

To address concerns that high-fWHR managers are more likely to get married and divorced, and that marital events distract fund managers from their investment duties, we remove returns reported during the six-month period around each marriage and divorce from the sample of fund managers in the 13 U.S. states where marital records are publicly available and redo the baseline regressions. Panel F of Table A1 shows that limited attention does not drive our results.

F. Style-adjusted returns

The Fung and Hsieh (2004) model may not adequately capture the risk exposures of the funds given the heterogeneity in investment styles. Therefore, we rerun the performance regressions with style-adjusted return and alpha. Fund style-adjusted return is the return of a fund minus the average return of the funds in the same investment style for that month. Fund style-adjusted alpha is defined analogously. Panel G of Table A1 shows that the baseline findings are robust to adjusting for investment style.

G. Jewish managers

To cater to concerns that our findings may be driven by fWHR differences between Jewish and non-Jewish men, we also redo our regressions on Jewish managers.[1] Panel H of Table A1 shows that the baseline findings also apply to Jewish men.

H. Female fund managers

The fWHR measure does not typically predict aggressive behavior in women (Carré and McCormick (2008) and Carré, McCormick, and Mondloch (2009)). For example, Carré and McCormick (2008) find that fWHR predicts aggressiveness in male hockey players but not in female hockey players. Since women have higher levels of oestrogen and growth hormone, which can also influence bone growth (Juul (2001)), facial structure in men and in women likely reflect different growth and endocrine mechanisms, and are thus not easily comparable (Lefevre et al. (2013)). As a placebo test, we reestimate the baseline regressions with only female fund managers. Consistent with Carré and McCormick (2008), Panel I of Table A1 indicates that fWHR is not related to performance for the 65 female fund managers in our sample with valid photos.

[1]We identify 199 Jewish managers in our sample by matching manager last names to the list of Jewish last names in the following website: https://www.familyeducation.com/baby-names/browse-origin/surname/jewish.

I. Extreme fWHR observations

To verify that our findings are not driven by the extremely high fWHR observations, each year we remove from the sample funds with fWHRs in the top 10th percentile and reestimate our baseline performance regressions. As Panel J of Table A1 shows, our results remain qualitatively unchanged after removing funds with such extreme fWHR observations.

References

Barber, B., and T. Odean. "Trading Is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors." *Journal of Finance*, 55 (2000), 773–806.

Barber, B., and T. Odean. "Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment." *Quarterly Journal of Economics*, 116 (2001), 261–292.

Carré, J. M., and C. M. McCormick. "In Your Face: Facial Metrics Predict Aggressive Behavior in the Laboratory and in Varsity and Professional Hockey Players." *Proceedings of the Royal Society B: Biological Sciences*, 275 (2008), 2651–2656.

Carré, J. M.; C. M. McCormick; and C. J. Mondloch. "Facial Structure is a Reliable Cue of Aggressive Behavior." *Psychological Science*, 20 (2009), 1194–1198.

Fung, W., and D. Hsieh. "Hedge Fund Benchmarks: A Risk Based Approach." *Financial Analysts Journal*, 60 (2004), 65–80.

Juul, A. "The Effects of Oestrogens on Linear Bone Growth." *Human Reproduction Update* 7 (2001), 303–313.

Lefevre, C. E.; G. J. Lewis; D. I. Perrett; and L. Penke. "Telling Facial Metrics: Facial Width is Associated with Testosterone Levels in Men." *Evolution and Human Behavior*, 34 (2013), 273–279.

Table A1: **Additional robustness tests**

This table reports additional robustness tests on the baseline multivariate regressions on hedge fund performance. The dependent variables include *RETURN* and *ALPHA* where *RETURN* is the monthly hedge fund net-of-fee return and *ALPHA* is the Fung and Hsieh (2004) monthly alpha with factor loadings estimated over the last 24 months. The primary independent variable of interest is fund fWHR (*FWHR*). The other independent variables include fund management fee (*MGTFEE*), performance fee (*PERFFEE*), high-water mark indicator (*HWM*), lock-up period in years (*LOCKUP*), leverage indicator (*LEVERAGE*), age in years (*AGE*), redemption period in months (*REDEMPTION*), and log of fund size (log(*FUNDSIZE*)) as well as dummy variables for year and fund investment strategy. The coefficient estimates on these control variables are omitted for brevity. The *t*-statistics, in parentheses, are derived from robust standard errors that are clustered by fund and month. The sample period is from January 1994 to December 2015. *, ** denote significance at the 5% and 1% levels, respectively.

	Dependent variable			Dependent variable	
	RETURN	*ALPHA*		*RETURN*	*ALPHA*
Independent variable	(1)	(2)	Independent variable	(3)	(4)
Panel A: Excluding managers who smile broadly in their photos			Panel F: Controlling for limited attention due to marital events		
FWHR	-0.401*	-0.383**	*FWHR*	-0.342*	-0.263*
	(-2.38)	(-3.59)		(-2.02)	(-2.29)
Panel B: Hedge funds with only one manager			Panel G: Style-adjusted fund return and alpha		
FWHR	-0.354*	-0.367*	*FWHR*	-0.150**	-0.332**
	(-2.03)	(-2.19)		(-3.41)	(-3.92)
Panel C: Subsample analysis - Jan 1994 to Dec 2004			Panel H: Jewish fund managers		
FWHR	-0.494*	-0.620*	*FWHR*	-0.724*	-0.452**
	(-2.05)	(-2.23)		(-2.30)	(-2.79)
Panel D: Subsample analysis - Jan 2005 to Dec 2015			Panel I: Female fund managers (placebo)		
FWHR	-0.360*	-0.353*	*FWHR*	0.252	0.481
	(-2.40)	(-2.44)		(0.45)	(1.64)
Panel E: Controlling for excessive trading			Panel J: Excluding funds in the top 10th fWHR percentile		
FWHR	-0.485**	-0.452**	*FWHR*	-0.339*	-0.477**
	(-4.45)	(-3.69)		(-2.01)	(-2.98)

Table A2: **Summary statistics for hedge funds with and without valid manager photos**
This table presents summary statistics for the sample of hedge funds with valid manager photos and the sample of hedge funds without valid manager photos. For each male manager in the combined database, we use manager first name, manager last name, and fund management company name to perform a Google image search for the manager's facial picture or pictures. The manager photos are typically culled from investment management company websites, LinkedIn profiles, investment conference webpages, high society websites, news articles, and social media. On several occasions, we are able to obtain manager photos even when the manager has moved to another firm or has shut down his fund by searching for his current place of employment listed on his LinkedIn or Bloomberg profile. Since measurement error can creep into the computation of fWHR if the manager is not fully forward facing or has significant facial adiposity, we exclude photographs of such managers from the sample. Monthly alpha is Fung and Hsieh (2004) abnormal return where factor loadings are estimated over the last 24 months. There are 2,629 hedge funds with valid manager photos and 19,442 hedge funds without valid manager photos. The sample period is from January 1994 to December 2015. *, ** denote significance at the 5% and 1% levels, respectively.

	Funds with manager photos		Funds without manager photos		Difference in	*t*-statistic
Fund characteristics	Mean	Std dev	Mean	Std dev	means	
Management fee (%)	1.43	0.62	1.47	0.75	-0.04	-1.47
Performance fee (%)	17.46	6.67	16.25	7.89	1.21	1.40
High-water mark indicator	0.76	0.43	0.63	0.48	0.13	1.29
Lockup indicator	0.26	0.44	0.22	0.38	0.04	1.54
Mean lockup period (days)	209.44	220.76	191.77	238.69	17.67	1.04
Redemption period (days)	62.49	82.44	54.82	61.82	7.67	1.33
Leverage indicator	0.63	0.48	0.58	0.49	0.05	1.52
Fund age (years)	3.59	3.34	3.46	2.67	0.13	1.71
Monthly return (%)	0.45	9.14	0.50	4.09	-0.05	-1.86
Monthly alpha (%)	0.36	2.11	0.32	1.18	0.04	1.13
Monthly flow (%)	1.12	5.94	1.44	5.43	-0.32	-1.14
AUM (US$m)	423.26	5642.66	758.94	2117.1	-335.68	-0.92

Table A3: **Additional fund characteristics of portfolios sorted on fund fWHR**

Every January 1st, hedge funds are sorted into ten portfolios based on the average facial width-to-height ratio (fWHR) of the managers operating the funds. Only male managers are included in the sample. The table reports the fund characteristics of the portfolios averaged over the years. The fund characteristics include management fee in percentage, performance fee in percentage, the high-water mark indicator, the lock up indicator, the lock up period in days, the redemption period in days, the leverage indicator, and fund age in years. The sample period is from January 1994 to December 2015. *, ** denote significance at the 5% and 1% levels, respectively.

Hedge fund portfolio	Management fee (%) (1)	Performance fee (%) (2)	High-water mark indicator (3)	Lock up indicator (4)	Lock up period (days) (5)	Redemption period (days) (6)	Leverage indicator (7)	Fund age (years) (8)
Portfolio 1 (high fWHR)	1.51	18.84	0.79	0.25	164.36	58.63	0.74	3.38
Portfolio 2	1.42	18.24	0.73	0.27	176.13	62.81	0.70	3.62
Portfolio 3	1.41	18.54	0.81	0.38	310.25	63.83	0.65	3.53
Portfolio 4	1.37	16.55	0.74	0.28	232.02	60.36	0.66	3.95
Portfolio 5	1.49	17.03	0.73	0.22	199.52	65.49	0.59	3.47
Portfolio 6	1.39	17.78	0.70	0.21	171.90	59.36	0.59	3.56
Portfolio 7	1.40	17.91	0.74	0.24	151.86	61.21	0.59	3.29
Portfolio 8	1.41	17.81	0.76	0.32	265.16	65.27	0.56	3.59
Portfolio 9	1.47	17.78	0.75	0.31	256.57	57.32	0.62	3.43
Portfolio 10 (low fWHR)	1.43	18.19	0.74	0.27	185.92	65.87	0.61	3.79
Spread (1-10)	0.08**	0.66**	0.06**	-0.02**	-21.56**	-7.24**	0.13**	-0.41

Table A4: **Multivariate regressions on hedge fund performance with trading behavior metrics**
This table reports results from multivariate OLS regressions on hedge fund performance. The dependent variables include *RETURN* and *ALPHA* where *RETURN* is the monthly hedge fund net-of-fee return and *ALPHA* is the Fung and Hsieh (2004) monthly alpha with factor loadings estimated over the last 24 months. The primary independent variable of interest is fund fWHR (*FWHR*). The other independent variables of interest include *LOTTERY*, *DISPOSITION*, *NONSPRATIO*, and *ACTIVESHARE*. *LOTTERY* is the maximum daily stock return over the past one month averaged across stocks held by the fund as in Bali, Cakici, and Whitelaw (2011). *DISPOSITION* is percentage of gains realized (PGR) minus percentage of losses realized (PLR) as in Odean (1998). *NONSPRATIO* is the ratio of the number of non-S&P 500 index stocks bought in a quarter to the total number of new positions in the quarter. *ACTIVESHARE* is Active Share (Cremers and Petajisto, 2009) relative to the S&P 500. These trading behavior measures are averaged over the prior four quarters. The other independent variables include fund management fee (*MGTFEE*), performance fee (*PERFFEE*), high-water mark indicator (*HWM*), lock-up period in years (*LOCKUP*), leverage indicator (*LEVERAGE*), age in years (*AGE*), redemption period in months (*REDEMPTION*), and log of fund size (log(*FUNDSIZE*)) as well as dummy variables for year and fund investment strategy. The coefficient estimates for these fund control variables are omitted for brevity. The t-statistics, in parentheses, are derived from robust standard errors that are clustered by fund and month. The sample period is from January 1994 to December 2015. *, ** denote significance at the 5% and 1% levels, respectively.

	Dependent variable									
	RETURN	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
FWHR	-0.384*	-0.327**	-0.321*	-0.284*	-0.318*	-0.277	-0.318*	-0.280*	-0.323*	-0.286*
	(-2.34)	(-3.06)	(-2.19)	(-2.00)	(-2.18)	(-1.94)	(-2.25)	(-1.96)	(-2.28)	(-2.00)
LOTTERY			-3.249*	-1.662						
			(-2.19)	(-1.34)						
DISPOSITION					-0.819	-1.954**				
					(-0.57)	(-4.54)				
NONSPRATIO							-0.065**	-0.047**		
							(-3.98)	(-2.95)		
ACTIVESHARE									-0.113**	-0.085**
									(-4.52)	(-3.50)
Other Fund Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strategy Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.029	0.016	0.033	0.010	0.033	0.010	0.033	0.010	0.033	0.011
Number of Observations	133,906	102,026	116,448	93,974	116,363	93,906	117,058	93,888	117,078	93,888

Table A5: **Additional endogeneity tests with major personal events**
This table reports results from multivariate OLS regressions on hedge fund performance. The dependent variables include *RETURN* and *ALPHA* where *RETURN* is the monthly hedge fund net-of-fee return and *ALPHA* is the Fung and Hsieh (2004) monthly alpha with factor loadings estimated over the last 24 months. The primary independent variables of interest are fund fWHR (*FWHR*), fWHR percentile rank that is computed every year and takes values from zero to one (*FWHR_RANK*), an indicator variable that takes a value of one when the fund manager married within the past year (*NEWLY_MARRIED*), and an indicator variable that takes a value of one when the fund manager has a young child who is less than a year old (*NEW_FATHER*) as well as the interactions of *FWHR* and *FWHR_RANK* with *NEWLY_MARRIED* and *NEW_FATHER*. The other independent variables include fund management fee (*MGTFEE*), performance fee (*PERFFEE*), high-water mark indicator (*HWM*), lock-up period in years (*LOCKUP*), leverage indicator (*LEVERAGE*), age in years (*AGE*), redemption period in months (*REDEMPTION*), and log of fund size (log(*FUNDSIZE*)) as well as dummy variables for year and fund investment strategy. The coefficient estimates on these control variables are omitted for brevity. The *t*-statistics, in parentheses, are derived from robust standard errors that are clustered by fund and month. The sample period is from January 1994 to December 2015. *, ** denote significance at the 5% and 1% levels, respectively.

	Dependent variable							
	RETURN	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FWHR	-0.701**	-0.670**			-0.470	-0.487**		
	(-3.51)	(-3.44)			(-1.84)	(-3.04)		
FWHR_RANK			-0.394**	-0.376**			-0.240	-0.303**
			(-3.31)	(-3.61)			(-1.72)	(-3.28)
NEWLY_MARRIED	-1.461*	-3.876**	-0.866**	-1.007*				
	(-2.43)	(-2.78)	(-3.84)	(-2.29)				
*NEWLY_MARRIED*FWHR*	1.718**	2.961**						
	(4.27)	(3.81)						
*NEWLY_MARRIED*FWHR_RANK*			1.483*	1.425*				
			(2.41)	(2.32)				
NEW_FATHER					-3.871	-3.625	-1.517*	-1.675**
					(-1.14)	(-1.59)	(-2.47)	(-3.32)
*NEW_FATHER*FWHR*					3.356	3.148**		
					(1.88)	(2.69)		
*NEW_FATHER*FWHR_RANK*							1.682	1.705*
							(1.77)	(2.45)
Other Fund Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strategy Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.027	0.018	0.028	0.018	0.032	0.020	0.032	0.020
Number of Observations	43,252	32,921	43,252	32,921	49,444	37,896	49,444	37,896