Hair Loss, Body Height and Attractiveness Malus for Men

Ronald Henss

Abstract

In a study on social perception of genetically caused hair loss in men (androgenetic alopecia), facial photographs of 59 men from the estimated age range of 28 to 58 were assessed. The photos were taken from a model catalog and, when viewed objectively, the men were considerably more attractive than the average of their peers. In a supplementary experiment, 21 students assessed all the photos according to the degree of hair loss. The internal consistency was almost perfect (Cronbach's α =.99). The main experiment was conducted online in a German and an English version. Each of the 1618 participants rated a randomly selected photo on 36 personality-descriptive rating scales and estimated age, height and weight. From the ratings, the factors attractiveness, mood, family orientation, professional status, social agreeableness, emotional stability and masculine facial features were obtained. The personality factors have sufficient to very high reliability (α =.73 to.88). The items babyface and likeable were also taken into account. For all variables, the consensus among the judges is at least good, mostly high to excellent (ICC(1, k) =.75 to.98). There are no noteworthy differences between the German and English versions, nor between male and female judges, but the age of the judges has a significant influence on the factors of attractiveness, family orientation and professional status. In the case of attractiveness, the ratings become more positive as the age of the judges increases, while the opposite is true for family orientation and status. With one exception, the men were rated favorably in every respect. The exception is attractiveness and, in particular, the sexual component. Here the ratings were a downright degradation, which we refer to as an attractiveness malus for men. At the level of the judges, hair loss is the dominant variable. With increasing hair

loss, men appear older, less attractive, smaller, less masculine, less intelligent and successful at work, more family-oriented, more socially agreeable, in a better mood and more likeable. At the stimulus person level, only the correlation with age and attractiveness and mood is significant. At this level, estimated height is the dominant variable. It correlates positively with attractiveness, emotional stability and masculine appearance and negatively with age, family orientation, social agreeableness, mood and being likeable. The estimated body height thus shows the mirror image of hair loss at the level of the judges. The study makes it clear how important it is to distinguish between the level of the judges and the level of the judged. The level of the stimulus person shows that the individual characteristics are of the greatest importance, but the degree of hair loss can modify the first impressions.

Keywords: Hair Loss, Male Pattern Baldness, Androgenetic Alopecia, Body Height, Physical Attractiveness, Sexual Attractiveness, Attractiveness Stereotype, Attractiveness Malus for Men, Age, Personality Impressions, Social Perceptions, Face Perception, Males, Consensus among Judges.

Highlights

- High agreement among judges and high reliability of the measurement instruments
- No noteworthy effects of language version and sex of the judges
- Age of judges influences assessment of attractiveness, family orientation and professional status
- Degree of hair loss is the dominant variable at the level of the judges, but not at the level of the judged
- At the level of the people being judged, estimated height is the dominant variable
- With the exception of attractiveness, men are rated positively in all areas
- The evaluation of attractiveness is very negative, with regard to the sexual component, the verdict is a degradation

Introduction

Don't judge a book by it's cover. Where it is literally about books, this advice may be justified. However, it means something else, namely that people should not be judged by their outward appearance. This admonition is as futile as it is impracticable. People cannot help but judge their fellow human beings – not exclusively, but also – by their outward appearance. In this, the face plays a paramount role. No part of the human body provides anywhere near as much multifaceted and meaningful information as the face, and people use this rich source whether they want to or not.

The perception of faces has characteristics of an instinct; it is automatic, unconscious and lightning-fast. Even with a presentation time of just 40 milliseconds, people can make judgments about unfamiliar faces that do not change markedly even after prolonged observation. After just 24 hours, newborns prefer happy faces to fearful ones and after a few months, infants look at attractive faces for longer than at unattractive ones. We can distinguish a huge number of faces individually and we recognize people we have not seen for decades. The brain contains modules that are specifically designed to

process faces and there are even cells that react specifically to attractiveness.[1]

Our impressions can relate to all areas of personality, to outwardly visible features, character, temperament, abilities, emotions, social effects on others, social status, intentions, interests, attitudes and more. In psychological studies, participants have no problem judging photographs of other people's faces according to such attributes. An important point is that our impressions are largely subjective, but there is a common core with regard to almost all characteristics. The size of this core varies from feature to feature, but for some features it is considerably large and for some it is a very big chunk. Even where concordance is not very high, two to three dozen judges are often sufficient to obtain a reliable group standard by averaging. Consensus among judges is one thing, another question concerns accuracy. In this respect, the situation is quite different. Even if we agree with others to a high degree, our impressions of many characteristics prove to be rather inaccurate and are often wrong.[2] However, this does not undermine the fact that such impressions can have tangible consequences in different areas of life.

The subject of this paper is the assessment of strangers on the basis of facial photographs, but our focus is not on the face but on the hair. In a way, our hair is the frame to our face and this frame can profoundly modify the impression we convey to others. This is especially true when, as in the case of genetically induced hair loss in men (Androgenetic Alopecia), the hair becomes less and less until finally the top of the head is completely bald. It is the effects of this process on the beholder which lie at the focus of this paper.

Androgenetic alopecia in men is a specific form of hair loss with a distinctive progression and an extraordinarily high prevalence.

Male pattern hair loss is not a sudden event, but a process that takes place over a number of years. It „typically begins with a bi-temporal recession of the frontal hair line, followed by a thinning of hair in the frontal and vertex scalp areas, which eventually results in complete baldness of the top of the scalp" Henne, Nöthen and Heilmann-Heimbach (2023, p. 3). It is important to note that even in the final stage, only the surface of the head is bald. In any case, a horseshoe-shaped fringe of hair remains. A fully developed androgenetic alopecia gives a very different impression than a completely bald head.

Androgenetic alopecia is particularly widespread among men of European descent. The figures vary, some even speak of „a lifetime prevalence of ~80% in European men" (Henne et al., 2023, p. 3). However, this refers on the one hand to the entire lifetime and on the other hand to different manifestations. Some men suffer significant hair loss as early as their twenties, most not until the second half of their lives; and only a minority reach the final stage of a fully developed alopecia, even in old age.

Androgenetic alopecia has biological causes and thanks to the impressive advances in pharmacological and medical research, it can now be treated causally – not prevented, but its development can be slowed down or even stopped.[3] Androgenetic hair loss in men is a perfectly normal phenotypic variant; it does not hurt, it is not contagious, it does not cause any immediate impairment and it does not cause any immediate material damage. It is not primarily a medical problem, but a psychological one.

There are probably only a few men affected who are completely indifferent to losing their hair, but the vast majority cope with it without any notable psychological impairment. However, there are also a considerable number for whom hair loss causes more or less severe problems.[4] Not only friends and acquaintances, hairdressers, dermatologists and psychologists are aware of this, but also a multi-billion dollar industry that promises help in various ways.

Concerns and unease about hair loss are by no means unfounded. There are not many empirical studies available, but these leave no doubt that hair loss has some negative effects on the way men are perceived by others and that it particularly affects an area that is of special importance to most people:

- Men with a receding hairline or even full-blown androgenetic alopecia are less attractive than men with a full head of hair.

Alongside age, sex and intelligence, physical attractiveness is one of the most important human characteristics. Although it is more important for women than for men, it also has very real consequences for men. This does not only apply to mate choice and close relationships. Attractiveness has repercussions in other areas of life and the loss of cranial hair can have negative effects in various spheres.

In this paper, we are not concerned with psychological problems of those affected or with ramifications in their lives. We are only concerned with the effect of hair loss on the evaluation by others. After all, that is the starting point. If others were completely indifferent to the appearance of their fellow human beings, there would be no cause for concern for those affected and the amount of hair would have no consequences.

Almost a quarter of a century ago, we outlined the state of research on social perception of male pattern baldness in a review (Henss, 2001). On the one hand, the article deals with theoretical aspects of hair from a psychological, sociological and cultural perspective. On the other hand, it provides an overview of empirical research on social perception of hair loss. Readers who are not familiar with the subject are recommended to read the article as a baseline.[5]

Recently, we published an empirical study on social perceptions of hair loss (Henss, 2024). Stimulus subjects were 13 men in their early 30s to mid-60s with full-blown androgenetic alopecia who owned a high-quality individually tailored toupee. Under standardized conditions, two portrait photos were taken by a professional photographer, one with a bald head and one with a toupee. In an online experiment, the photos were assessed by three large samples. One judged the men on *attractiveness* (n = 365), another on *self-assurance* (n = 1952) and another on *health* (n = 1408). The participants assessed all 13 men one after the other. The order was randomized and for each target it was randomly determined whether he was presented with a full head of hair or bald. Thus, the judges saw different sequences and combinations. With regard to self-assurance, there was no difference between toupee and bald head. The men appeared healthier with a full head of hair, but the effect was weak (Cohen's d = 0.15). In contrast, the effect on attractiveness was strong (d = 0.67). When wearing their toupee, the men were considerably more attractive. Actually, one has to rephrase this statement: When the men wore their toupee, they were not quite as unattractive as when they were bald. The outstanding result of that study is the fact that the men were rated extremely unfavorably in terms of attractiveness. On a scale of 1 to

9, they scored only 3.10 points with a full head of hair and only 2.39 with a bald head, with the women delivering more derogatory ratings than the men (2.65 vs. 3.14; p <.001; d = 0.58). With regard to self-assurance and health, however, the ratings were slightly above the scale midpoint of 5. The stimulus persons were in no way a negative selection, they were attractive to varying degrees, but they were men as one encounters them in everyday life. From an objective point of view, none of them could be described as exceptionally unattractive. The raters saw this differently. We have labeled the extreme devaluation of attractiveness, which is tantamount to demeaning, *Attractiveness Malus for Men*.

Research on facial evaluation repeatedly shows that men are rated worse than women in terms of attractiveness, although this is not the case for other characteristics. Formerly, we referred to this as the attractiveness bonus for young women (Henss, 1992, 1998). Since the attractiveness of women is usually not far above the center of the scale, but the value of men is usually below it, often considerably, sometimes extremely, it is more appropriate to speak of an attractiveness malus for men. As the title suggests, this is one of the focal points of the current study.

This study is based on a methodological approach that differs from the other in many ways. In the other study, each participant rated all stimulus persons with regard to a single characteristic. In the present study, however, each participant rated a single randomly selected stimulus person on many characteristics. In the other study, the stimulus persons were „ordinary" men, now we use photographs taken from a model catalog and thus look at a sample that is on average much more attractive than their age group. In the other study, toupee and a bald head were compared, i.e. the two extreme variants of hair status; now we look at men who cover the entire spectrum from a full head of hair to a completely bald head. In the other study there were 13 stimulus persons, now there are 59. In the other study we considered a German-language version, now we consider a German-language and an English-language version.

Both approaches have strengths and weaknesses. The particular strength of the other study is the systematic experimental manipulation of hair status within one and the same stimulus persons. In the present study, the various degrees of hair loss are embodied by individuals who differ from each other in many other respects. The strength here lies in the broader range of characteristics with regard to which the men were assessed.

36 rating scales were used to capture the areas of attractiveness, mood, social agreeableness, emotional stability, family orientation, professional status, intelligence, masculine and mature physiognomy. The items and the personality factors derived from them are listed in Table 4.

In the item selection for attractiveness, we focused on the sexual component, as this is rarely considered, but it can be assumed that it is the sexual component in particular that is strongly affected by hair loss.

One item should be mentioned separately, namely *babyface*. Some consider male baldness to be a signal of dominance (Guthrie, 1976). Others point to the resemblance to babies and consider it a signal of appeasement (Muscarella and Cunningham, 1996). As the decades-long work of Leslie Zebrowitz shows, features of the Kindchenschema are of great importance in impression formation (Montepare and Zebrowitz, 1998; Zebrowitz, 1997, Zebrowitz, 2011). If a bald head goes hand in hand with a childlike physiognomy, it should rather signal social agreeableness, whereas in combination with a pronounced male physiognomy it should rather signal dominance.

Following the ratings, the participants were asked to estimate the man's age, body height and body weight. As can be seen from the title of this paper, height is also a focal point of this study. When we planned and carried out the investigation, we were well aware that height is of considerable importance in men, but we regarded it as one variable among others. When we analyzed the data, we were surprised to find that it played an overwhelmingly important role.

People have always known that physical strength and body height are highly important attributes of men, and to this day, taller men are more successful in many areas than their not-so-tall peers.[6] Attractiveness research is aware of the importance of body height, but as with hair loss, its social perception is poorly investigated. Here we would just like to mention a few findings from our laboratory.

In a study by Iris Schmidt (2001) on criteria of mate choice, 72 young women estimated the average height of German men between the ages of 20 and 30 to be 179.2 meters. The average height of their actual partner was 180.0 meters, while the height of an ideal partner was 181.9 meters. They themselves were 168.1 meters tall on average. This means that an ideal partner would be 13.8 cm taller than they themselves, 2.7 cm taller than the average and 1.9 cm taller than their actual partner. In an earlier study (Henss, 1989), we obtained the following mean scores from a sample of 136 young women: Self 167.7; male average 179.0; actual partner 181.9, ideal partner 181.3. Here, women had not only wished for a taller partner, but had actually gotten one. As it happens, the height of the actual partner corresponds exactly to the ideal height in Schmidt (2001). The two studies show: Women want taller men. This has long been known in attractiveness research and most laypeople know this too.[7]

Isabel Poß (2002) investigated effects of babyface features and masculine facial features on personality impressions. The starting point were facial photographs of 8 young men, 8 baby photos and a photo of Arnold Schwarzenegger. From the baby photos, she constructed an average face that served as a prototypical babyface. The photo of Arnold Schwarzenegger served as the prototype of a masculine face. Each photo of the 8 young men was warped in a weak and a somewhat stronger version, once in the direction of the babyface and once in the direction of Arnold Schwarzenegger.[8] Together with the original, this resulted in 40 photographs. In an online experiment, 2,222 participants assessed a randomly selected photo with regard to 47 personality traits and 24 physiognomic characteristics and estimated age and body height. The height estimation showed a steep increase from the stronger to the weaker babyface variant to the original and from there a further, but not quite as steep increase from the weaker to the stronger Schwarzenegger variant. In other words: The fewer babyface features and the more masculine the facial features, the taller men are estimated to be. Overall, the increase was a staggering 5 centimeters. With regard to our own study, it should be mentioned that the concordance among judges was by far the highest for the age estimate (ICC(1,1) =.41), that body height and the Attractiveness factor were judged with the same concordance (.15) and that the consensus was lowest for the Emotional Lability factor (.07).

In another study (Henss, 1993), we used context effects based on Parducci's Range-Frequency Theory (1965, 1982). In a pre-test, the attractiveness of young men and women was determined on the basis of portrait photographs. For the main experiment, the target persons were selected as being of average attractiveness. They were to be judged either together with predominantly unattractive or predominantly attractive persons of the same sex. Under certain constraints, there will

be a contrast effect such that the targets appear more attractive in the less attractive context and less attractive in the more attractive context. In a 2 x 2 x 2 experimental design (sex of stimulus persons x sex of judges x context), each of the 8 conditions included 36 participants, for a total of 288. In attractiveness ratings, both the male and female photos and both the male and female judges produced the expected contrast effect. The special trick of this study is that not only attractiveness was assessed, the participants were also asked to estimate body height.[9] For photos of women, the context did not play a role. The same was true when men estimated the height of men. But when women estimated men's height, the targets appeared taller in the unattractive context and shorter in the attractive context. So here the mere manipulation of attractiveness has caused a change in the perception of height. This indicates that, from women's perspective, men's attractiveness and height are intertwined.

As the examples show, we have long been aware of the importance of body height for men. But it was only in the course of analyzing the data that we realized the enormous role it plays in our current study. And that was a big surprise to us.

Method

Stimulus material

The stimulus material consisted of 59 high-quality black and white portrait photographs of men taken from a model catalog. Although different types were represented, this is by no means a representative sample of German men. On the contrary, men who earn part or all of their living through modeling agencies are on average much more attractive than the general population. In addition, set cards in model catalogs are professionally designed and present the individuals in a particularly advantageous way. It is not a deliberate selection of super models, but none of the men can be described as unattractive when viewed objectively.

Procedure

The study was conducted as an online experiment in 2000 in a German and an English version.[10] Recruitment took place via our homepage at the Psychological Institute of the University of the Saarland in Saarbrücken, which was well frequented due to numerous previous online experiments. Participation was non-binding and anonymous. The experiment was described as a study on face assessment. The actual purpose, namely the impact of hair fullness, was not mentioned at all.

A single randomly selected photo was presented, which was to be rated on 36 unipolar five-point rating scales. Then the participants were asked to estimate the age, body height and body weight of the target person. In the German version in centimeters and kilograms, in the English version alternatively also in feet and inches and pounds. Finally, the participants were asked to state their own sex, age and country of origin, in the German version also the federal state.

In order to determine the core variable, namely the *degree of hair loss*, a supplementary test was carried out. Participants were 21 undergraduate students of psychology (15 females, 6 males). In individual sessions each subject evaluated the

full set of 59 photographs. The judgments were based on a modified version of Norwood's well-established classification system (Norwood, 1975) that comprises schematic representations of seven degrees of hair loss from a full head of hair (type I) to a fully developed androgenetic alopecia (type VII). The scheme was printed on a separate sheet, and the pictures were presented on a computer screen. Thus, the raters saw the photos in the same way as the participants in the main experiment. The ratings were coded from 1 (full head of hair) to 7 (fully developed alopecia).

Independent Variables

Our focal independent variable is the *degree of hair loss*. In addition, we take into account the *language version* and the *sex* and the *age of the judges*. The degree of hair loss and the age of the judges are continuous variables. We will use them as covariates in some analyses. In these cases, only the linear relationship is considered. As we assume that there may also be deviations from the linear trend, the continuous variables were used to form groups for other analyses.

Dependent variables

Our central dependent variables result from factor analyses and reliability analyses of the 36 rating scales. In addition, we take into account the estimates of age, height and weight of the stimulus persons. From the estimates of height and weight, the body mass index BMI is calculated using the formula BMI = Weight (kilogram) / Height (meter)^2.

Hypotheses

We expect that the correlations between the 36 rating scales closely correspond to our a priori assumptions and that the items can be aggregated into *reliable personality factors*. These are not completely independent factors, but they should be clearly distinguishable from one another.

On the basis of our own extensive studies on face assessment (in particular Henss, 1998), we assume that the *agreement between judges* varies depending on the respective trait. We expect the highest concordance for the degree of hair loss, the age estimates and the assessment of mood. We expect only moderate concordance for emotional stability.

With regard to the independent variables, only the most important expectations are outlined.

We assume that *hair loss* has an impact on various aspects of personality impressions. However, the extent and direction is not the same in all cases. We expect a strong negative effect on attractiveness and estimated age. For the personality domain in the narrower sense, we expect a mixed picture.

We also expect the *age of the participants* to play a role for at least some personality traits. In particular, we expect older judges to give more favorable ratings than younger ones in line with the *eigengroup bonus*.[11]

Where there are *sex differences*, we likewise expect men to give more positive ratings than women in line with the *eigengroup bonus*.

Furthermore, we expect that the pattern in relation to attractiveness is only partially consistent with the *attractiveness stereotype* „Who is attractive is also good".[12]

Data set and data analysis

In a restrictive screening of the data set of the main experiment, cases with more than two missing values were excluded. Thereafter, the proportion of missing values was 1 per 1,000. In order to avoid case-wise or list-wise exclusion in statistical analyses, values were imputed. The numbers were chosen so that they were close to the mean of the respective photograph.

In the supplementary test, there were no missing values.

The data analysis was performed in March and April 2024 using jamovi 2.3.28.

Results

Participants

Table 1 shows the number and mean age of the participants broken down by language version and sex.

Table 1. *Number and mean age of participants by Language Version and Sex.*

	Number			Age		
	Males	**Females**	**Total**	**Males**	**Females**	**Total**
German	228	410	638	30.3	24.4	26.5
English	253	727	980	27.3	23.8	24.7
Total	481	1137	1618	28.7	24.0	25.4

In total, our data set comprises 1618 participants. The number is higher in the English version than in the German version (980 vs. 638). In the English version, the Anglosphere dominates (USA 66.2 percent, Canada 8.8, UK 5.2, Australia / New Zealand 4.2). In the German version 530 participants come from Germany, 68 from Austria, 28 from Switzerland and 12 from other countries. In both versions, the number of women is considerably higher than that of men (overall 1,137 vs. 481). The difference is particularly pronounced in the English version. The men in the German version are 4.7 years older than in the English version. This corresponds to an effect size of 0.52. The men are 1.9 years older than the women (d = 0.21). In both versions, the vast majority have a school or academic background and the younger people are much more numerous than the older ones. Overall, the range extends from 14 to 67 years and the quartiles are 19, 23 and 29 years. This pattern corresponds perfectly to what we repeatedly observe in online studies. Since the age of the participants is confounded with their sex and the language version, this is another reason to pay specific attention to this variable in

addition to the research question itself.

1. *Reliability and statistical parameters of the core variable hair loss*

Our focus is on the degree of hair loss in the 59 stimulus persons. The assessment using the Norwood scale shows an extraordinarily high level of agreement between the 21 raters. Cronbach's α and McDonald's ω are .99. The correlation between the individual judgments and the average of the remaining group is between .87 and .97; the mean is .94, the median .95. We can assume that this aspect of the physical appearance is perceived with very high agreement even when attention is not drawn to it.

Fortunately, this variable shows a very wide spread. The minimum is 1.10, the maximum 6.67. That is almost the entire range of the 7-point scale. The mean value is 3.30, the median 2.62. Five groups were formed on the basis of the values 1.76, 2.33, 3.43 and 5.11. The first includes 11 men, the others 12 each. There are overlaps at the borders, but presumably few would confuse the members of two non-adjacent groups.

We will refer to the degree of hair loss as *Hair Loss* when we use it as a continuous variable and as *Hair Group* when we look at the groups.

2. *The level of the judges*

When analyzing the main experiment, we first look at the level of the judges. With 1618 participants, our sample is very large and hence the test power is very high.

Assessment of external characteristics. Age, sex, weight and BMI

First, we look at the assessment of the biological characteristics age, height and weight and the derived body mass index and the correlation with hair status. Table 2 summarizes statistical parameters.

Table 2. *Statistical parameters of perceived Hair Loss and estimates of Age, Height, Weight and derived BMI.*

	Hair Loss	Age	Height	Weight	BMI
Mean	3,29	42,8	178	78,2	24,6
Std. Dev.	1,70	9,29	5,37	7,97	2,44
Minimum	1,1	18	152	45	14,5
Maximum	6,67	72	198	132	38,3
10. Pecentile	1,52	30	170	68,7	21,9
25. Pecentile	1,95	35	175	73,0	23,1
50. Pecentile	2,62	43	178	79,0	24,4
75. Pecentile	4,71	50	180	81,6	25,9
90. Pecentile	6,19	55	185	86,2	27,6

The estimates include a few utterly unrealistic outliers, but outliers make up only a tiny fraction and are of no consequence in the very large sample. As the model catalog is no longer available, we are unfortunately unable to compare the estimates with real figures. Nevertheless, our data provide some interesting insights.

Table 3 shows the product-moment-correlation between the variables. According to convention, ***: $p < .001$; **: $p < .01$; *: $p < .05$ in two-sided tests. It should be noted that due to the very large sample, correlations that are of no substantial relevance may also be statistically significant.

Table 3. *Correlations Hair Loss, Age, Height, Weight, BMI.*

	Hair Loss		Age		Height		Weight	
Age	0,33	***	—					
Height	-0,19	***	-0,07	**	—			
Weight	-0,04		0,10	***	0,35	***	—	
BMI	0,07	**	0,15	***	-0,24	***	0,82	***

As expected, there is a positive correlation between *age* and *hair loss* (.33).

Of particular interest is the correlation between *hair loss* and estimated *height* (r = -.19), and this deserves a closer look. The fact that men with less hair are estimated to be shorter may seem trivial at first. Hair loss is associated with age and there was an acceleration of height in the 20th century, so older men in the population are actually shorter than younger men. As can be seen in Table 2, 80 percent of the age estimates are between 30 and 55 years. For this interval, the acceleration was about 3 centimeters (Henss, 2017; NCD, 2016). Remarkably, the correlation between estimated *age* and *height* is only -.07. Moreover, when hair loss is partialed out, it disappears (-.01). On the other hand, when age is partialed out, the correlation between hair loss and height is still -.18. This means that the negative correlation between hair loss and estimated height is not a side effect of age.

With regard to the estimated *weight*, hair status is of no importance, as is the derived *BMI*.

Derivation of the personality factors

The estimates of the age, height and weight of the stimulus persons are given directly. The other personality traits first had to be obtained from the 36 rating scales.

Exploratory factor analyses show that the items babyface, likeable and earnest are not suitable. After excluding these items, an explorative factor analysis using the maximum likelihood method and oblimin rotation leads to an appropriate 6-factorial solution. The Bartlett's test of sphericity results in a p <.001, the RMSEA is 0.0528 and the TLI.899, the MSA.89. The 6 factors explain 52.3 percent of the variance.

The factors are in excellent agreement with our a priori assumptions. We have only made one modification. One factor comprises 10 items, of which 5 are positive and 5 negative. We split them into two factors, one of which can be interpreted as Family Orientation and the other as Antagonism. This results in the mapping of the items to the factors summarized in Table 4.

Table 4. *Factors and items.*

Attractiveness	Family Orientation	Antagonism
erotic	family oriented	aggressive
good looking	good-natured	belligerent
seductive	honest	dangerous
sexy	likes children	dominant
successful with women	sincere	unpredictable
High Status, Intelligence	**Lability**	**Good Mood**
career oriented	anxious	cheerful
educated	insecure	in a good mood
high occupational status	naive	merry
intelligent	nervous	
successful in his job	sad	**Male Face**
	timid	masculine appearance
	withdrawn	mature face
		pronouncend male face

For Family Orientation and High Status, Intelligence we will use the shorthand*Family* and *Status*. We are particularly interested in the *Attractiveness* factor. It should be noted that the items*erotic* and *sexy* as well as *seductive* focus on the sexual component. The item *goodlooking* concerns the aesthetic evaluation and *successful with women* covers more than just the sexual component. We will refer to this factor as *Attractiveness*. We will later look at the individual items and differentiate between the sexual and the non-sexual components.

The results of a *reliability analysis* of the 7 factors are summarized in Table 5. Cronbach's α and McDonald's ω refer to the overall scale, r(i, t-i) denotes the corrected item-total correlation.

Table 5. *Reliability. Cronbach's α, McDonald's ω, Corrected Item-Total-Correlation.*

	Cronbach's α	McDonald's ω	r(i, t-i)
Attractiveness	.88	.88	.62 −.76
Good Mood	.86	.85	.71 −.76
Status	.86	.87	.64 −.75
Family	.83	.83	.52 −.68
Antagonism	.79	.80	.51 −.63
Lability	.75	.75	.37 −.56
Male Face	.73	.73	.48 −.62

The highest reliability is found for the factors Attractiveness, Good Mood and Status, the lowest for Lability and Male Face. According to common conventions, the reliability of the first three factors is good to very good and also acceptable for the last two. However, it should be borne in mind that α and ω increase with an increasing number of suitable items and that our factors only consist of very few items. Against this background, the reliability is highly satisfactory.

Dependent variables

Our dependent variables relate to two different areas. *Age*, *Height*, *Weight* and the derived *Body Mass Index* are biological characteristics that can be measured on a ratio scale, but are estimated in our case. On the other hand, there are personality traits that can only be assessed subjectively from the outset. In addition to the factors *Attractiveness, Family*, *Antagonism*, *Status*, *Good Mood*, *Lability* and *Male Face*, we also consider the items *likeable* and *babyface*, which are not covered by the factor structure but are of interest to us.

The variables are by no means independent of each other. On the contrary, there are multiple relationships and due to the very large sample, the vast majority of intercorrelations are statistically significant. However, if one restricts oneself to the cases that show at least 10 percent common variance (r >.316), the picture becomes very simple. The correlations between height and weight (.35) and weight and BMI (.82) are trivial. Beyond that, only the correlations contained in Table 6 are significant.

Table 6. *Correlations, shared variance > 10 per cent.*

	Family	Antagonism	Good Mood	Lability
Antagonism	-.58			
Status	.32			
Good Mood	.60	-.46		
Male Face				-.32
likeable	.64		.56	

Two values lie exactly on the criterion and would not justify a merger. This leaves only Family, Good Mood, Antagonism and likeable. One can immediately imagine this type of man: High social agreeability and family orientation paired with a good mood – men like this are simply likeable. But even the closest correlation only implies a shared variance of 41 percent. As these aspects are clearly distinguishable from each other conceptually, we retain the division.

Effects of hair loss, sex and age of the judges and language version

Our focus is primarily on the effect of hair loss. In second place is the influence of sex and age of the judges. Effects of language version would be rather „undesirable", but by no means uninteresting. In the first step, the degree of hair loss was operationalized by the five hair groups [1.10 – 1.71], [1.76 – 2.29], [2.33 – 3.19], [3.43 – 5.10], [5.14 – 6.67], whereas age was considered a continuous variable in order not to bloat the experimental design excessively. Table 7 shows the significant results of a 5 x 2 x 2 analysis of covariance Hair Group x Language x Sex with the Age of the judges as a covariate. It should be self-explanatory that Age means the estimated age of the stimulus persons as the dependent variable (row) and the age of the judges as the independent variable (column).

Table 7. *Significant effects. Hair Group x Language x Sex (Age).*

	Hair Group	Language	Sex	Age
Age	< .001	.018		
Height	< .001			
Weight	< .001	.039		
BMI	< .001	.039		
Attractiveness	< .001			< .001
Family	< .001			< .001
Antagonism	< .001	.002		.033
Status	< .001	< .001		.007
Good Mood	< .001			.049
Lability				
Male Face	< .001	< .001	< .001	
babyface	.005			
likeable	.002			

The table shows an extraordinarily remarkable picture. One remarkable fact cannot be seen in the table itself: Of the 4 x 11 interactions, only one is significant, and that is Language x Sex for Status, and even that only weakly (p =.032). But even beyond that, the picture is remarkably clear.

Apart from Lability, *Hair Loss* shows a significant correlation with all variables. Only babyface and likeable, which as individual items have a greater error variance, do not fall below the threshold of.001. There are significant differences between the *language versions* with regard to Antagonism, Status and Male Face and with regard to Age, Weight and BMI. The *sex* of the judges only leads to a significant difference for Male Face. The *age* of the judges, which was considered here as a covariate, shows 5 significant effects, but in two cases the p-value is very weak.

Fortunately, the *language version* shows only a few notable differences. For Age, Weight and BMI, the effect size is small (d = 0.14, 0.11, 0.11). For Antagonism it is 0.16, for Status 0.22. There is a notable difference for Male Face: In the German version the mean value is 2.97, in the English version 3.59; the effect size is 0.69.

The *sex* of the judges has only one significant effect, and that is for Male Face, but Cohen's d is only 0.11.

As regards *Lability* – this should not be left unnoticed – there is not a single difference to be registered, in particular no effect of hair status.

Effects of hair loss and the age of the judges

Since sex plays virtually no role and language version also makes little or no difference apart from Male Face, we can now take a closer look at the age of the judges. In the analysis as a covariate, only the linear component was taken into account. Now we look at age groups and thus non-linear effects can also be captured.

As with hair loss, we differentiate between 5 groups for the age of the judges, namely [14 – 19], [20 – 24], [25 – 29], [30 –

36] and [37 – 67].

Table 8 shows the significant effects in the 5 x 5 design Hair Group x Age Group.

Table 8. *Significant effects. Hair Group x Age Group.*

	Hair Group	Age Group	Hair x Age
Age	< 001		
Height	< 001		
Weight	.013		
BMI	.004		
Attractiveness	< 001	< 001	
Family	< 001	< 001	
Antagonism	< 001		.010
Status	< 001	< 001	
Good Mood	< 001		
Lability			
Male Face	.002		
Babyface	.018		
likeable	.019		

For *Hair Group*, the same picture emerges as in Table 7. For *Age Group*, there are only significant differences for Attractiveness, Family and Status. In addition, there is a significant interaction for Antagonism. However, a 5 x 5 interaction can hardly be interpreted meaningfully.
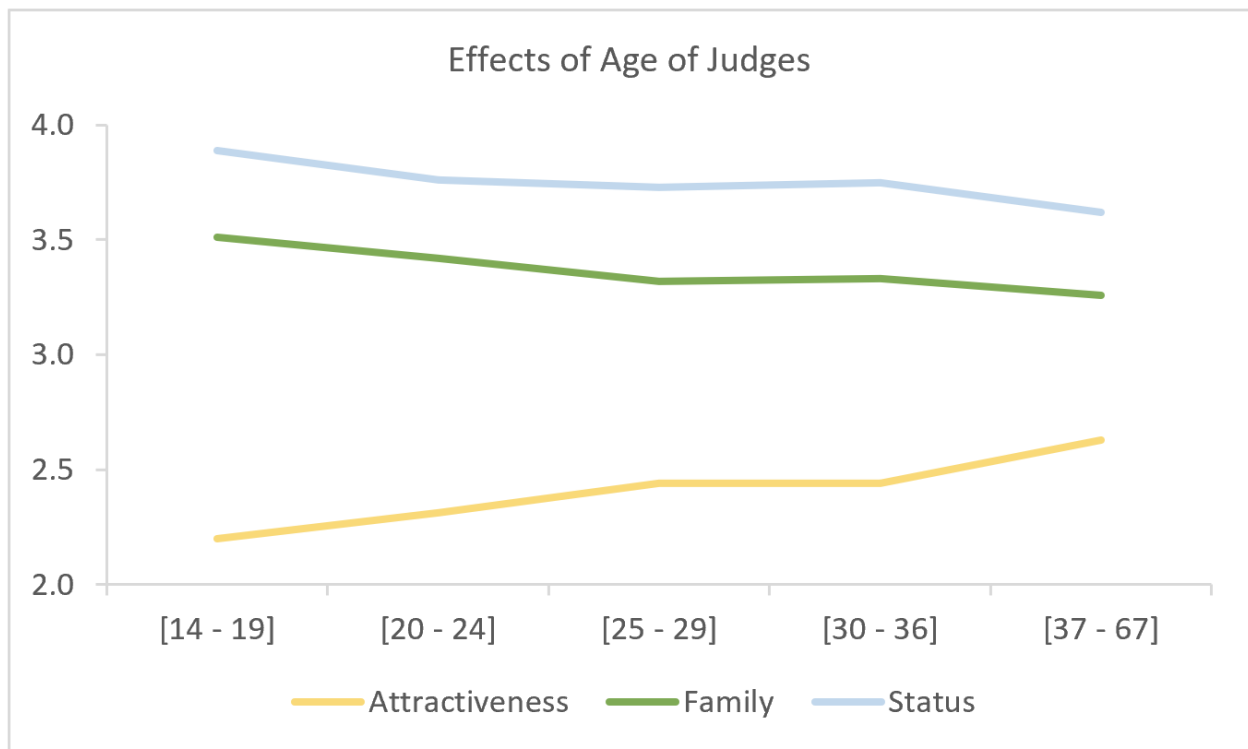
The effects of age are illustrated in Figure 1.

Figure 1. *Effects of Age of Judges on Attractiveness, Family, Status.*

The figure speaks for itself. The effects of age are linear. But the pattern is remarkable. In terms of Attractiveness, men are rated better as the judges get older. This is exactly as expected. With regard to Family Orientation, Professional Status and Intelligence, however, the opposite is true. There can be no talk of an eigengroup bonus here. Another important point is also immediately apparent: The attractiveness ratings are much lower than the ratings for Family and Status. They are considerably below the scale average of 3, whereas the other ratings are well above it. Here we see an unmistakable massive *attractiveness malus for men* – even though the photos are from a model catalog. We will come back to this point in more detail.

Now we come to our core topic, the impact of hair loss on social perception. With the exception of Lability, the effect is significant on all variables, in 7 cases even p <.001.

Table 9 shows the mean values broken down by Hair Group. In addition to the category, the mean score is given in brackets to indicate that the gaps are not equal. The difference between categories 1, 2 and 3 is not great, but the step from 3 to 4 and from 4 to 5 is considerable.

Table 9. *Mean scores by Hair Group.*

	Hair Group				
	1 (1.43)	2 (2.07)	3 (2.61)	4 (4.16)	5 (6.06)
Age	37.9	41.0	41.9	46.3	46.6
Height	179	179	178	177	177
Weight	78.2	79.0	79.3	76.7	78.1
BMI	24.3	24.5	25.0	24.4	25.0
Attractiveness	2.66	2.62	2.29	2.19	2.03
Family	3.38	3.17	3.52	3.41	3.51
Antagonism	2.56	2.81	2.40	2.47	2.46
Status	3.94	3.87	3.61	3.74	3.73
Good Mood	3.27	3.02	3.35	3.68	3.51
Lability	2.36	2.27	2.44	2.38	2.35
Male Face	3.25	3.57	3.34	3.23	3.35
babyface	2.28	1.94	2.12	2.18	2.02
likeable	3.47	3.34	3.61	3.58	3.65

It is impossible to keep track of so many figures at once. We illustrate the key results in figures. Figure 2 shows the results for Attractiveness, Family, Status and Likeable.
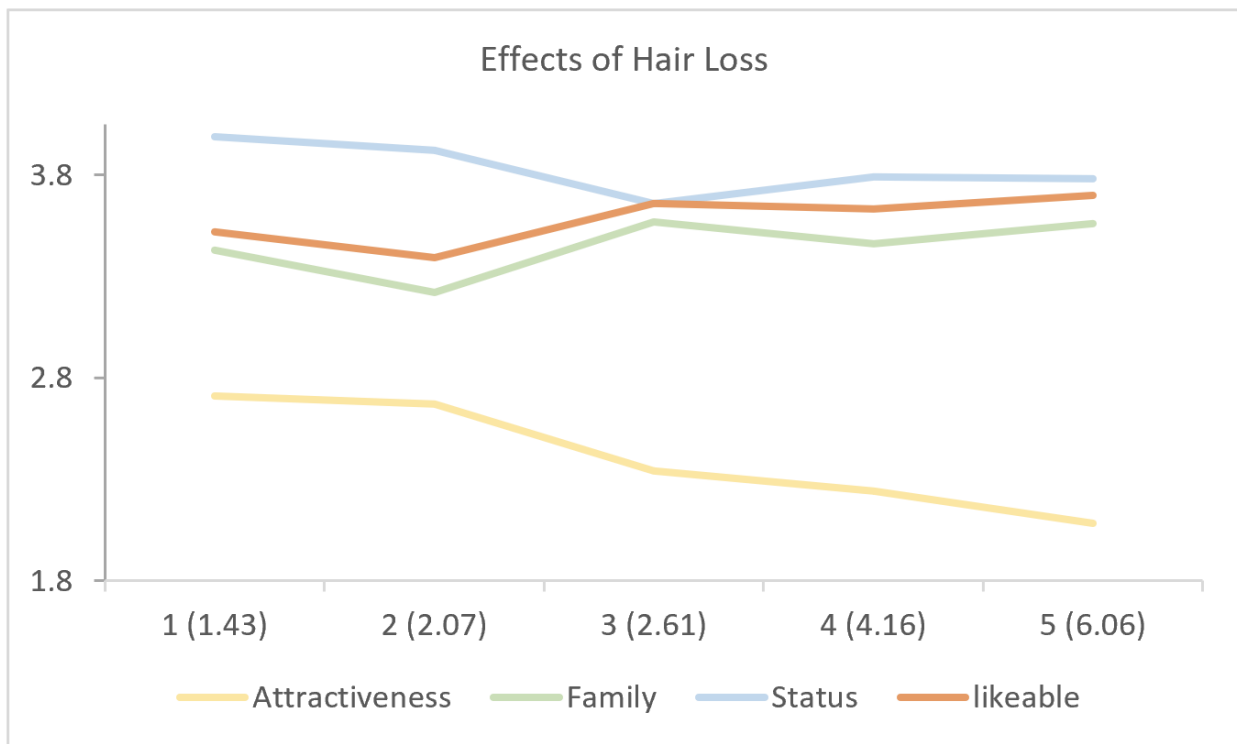

Figure 2. *Effects of Hair Loss on Attractiveness, Family, Status, likeable.*

The effect of hair status on *Attractiveness* is linear. As to be expected, the loss of hair goes hand in hand with a decline in

attractiveness. There is no difference between the first two groups, where the head of hair is still full or only minimally thinned, but after that attractiveness decreases rapidly. Here, too, we see the attractiveness malus in comparison to the other variables: Even with a full head of hair, the men are clearly below the midpoint of the scale. The scores for Family, Status and Likeable, on the other hand, are well above the midpoint for all levels of hair loss. In addition, the trend for these variables is not monotonic. This shows that, in tandem with the abundance of hair, there are other factors that differentiate the groups from one another.

The men receive the most favorable rating with regard to Status. From the first to the third group, the trend is negative, but then the rating rises again and then remains constant. The minimum is in the middle group, but the value of 3.61 is still far above the middle of the scale.

Family and Likeable run almost parallel. There is a downward bend in group 2, but here too all values remain above average. Figure 3 shows the trajectories for Antagonism, Good Mood, Male Face and babyface.
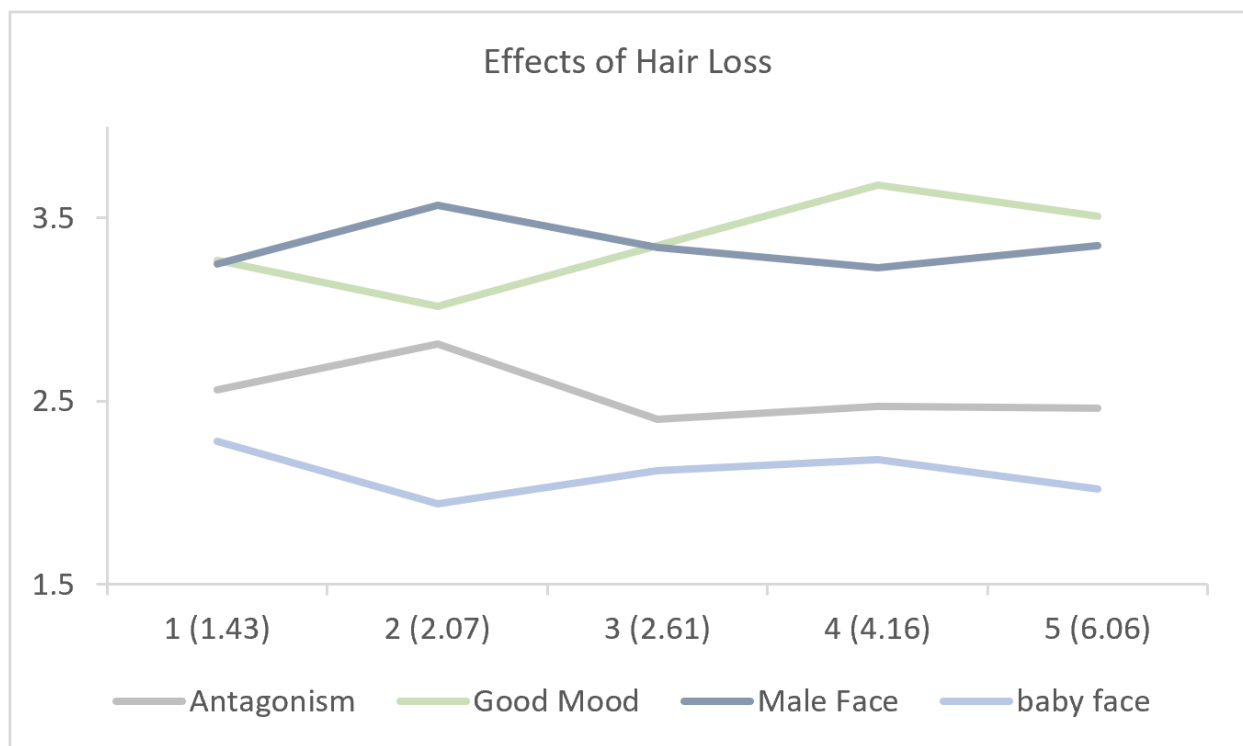
Figure 3. *Effects of Hair Loss on Antagonism, Good Mood, Male Face, babyface.*

What may seem disparate at first glance is not. Good Mood and Male Face are desirable characteristics, while Antagonism and babyface (in men) are undesirable. If the values of the latter are reflected at the center of the scale, Male Face and babyface run almost parallel. The courses of Antagonism and Good Mood are also very similar. Interestingly, group 2 always stands out, although the difference from its neighbors is small. It should also be mentioned here that after recoding, all scores are above average. The same applies to Lability, which we have not depicted because there are no differences between the hair groups.

This means that the men achieve above-average ratings in all areas, regardless of the degree of hair loss – except for Attractiveness. Here, the score is below average across all hair groups, and in most cases by a wide margin. Thus, the *attractiveness malus* is independent of hair status and age of the judges and, of course, of the language version and sex of the judges.

Consensus among judges

So far, we have analyzed the data at the level of the judges. In the next section, we look at the level of the stimulus persons. Before that, we examine how reliable the scores given to the stimulus persons are. This concerns the question of consensus among the judges.

In our study, each subject evaluated a single picture, so that each of the 59 men was judged by a different group. The measures of agreement among judges for this situation are the intra-class correlations ICC(1,1) and ICC(1, k).[13] ICC(1,1) refers to the agreement between individual judges and is the counterpart to the average inter-scale correlation in a reliability analysis. ICC(1, k) is the measure of the reliability of the average rating of the men, which we refer to as the group standard. Here k denotes the number of judges per stimulus person[14] and ICC(1, k) is the counterpart of Cronbach's α and McDonald's ω.

Table 10 shows the values in descending order. According to a rule of thumb by Koo and Lee (2016), ICC(1, k) < 0.5 poor; [0.5 – 0.75] moderate; [0.75 – 0.9] good; > 0.90 excellent.

Table 10. *Concordance among Judges. Intra-Class-Correlation ICC(1,1) and ICC(1, k).*

	ICC(1,1)	ICC(1, k)
Age	.68	.98
Good Mood	.40	.95
Attractiveness	.35	.94
Status	.27	.91
Antagonism	.22	.89
Male Face	.19	.86
Family	.18	.86
BMI	.18	.86
Weight	.15	.83
likeable	.13	.81
babyface	.12	.79
Height	.12	.78
Lability	.09	.75

As expected, the highest concordance is found in the age estimate. Reliability is also excellent for Good Mood, Attractiveness and Status and very good for Antagonism, Male Face, Family and BMI. Even Lability, which has the lowest concordance, still has good reliability. This means that the subsequent analyses have a very reliable basis.

3. *The level of the stimulus persons*

In the following, we look at the level of the stimulus persons. We are no longer dealing with 1618 judges, but with the 59 men who were assessed.

The external characteristics

First, we look at hair loss, age, height, weight and BMI. In principle, these could be measured objectively, but we only have estimates. Table 11 shows statistical parameters.

Table 11. *External characteristics. Statistical parameters.*

	Hair Loss	Age	Height	Weight	BMI
Mean	3.30	42.7	178.2	78.3	24.6
Std. Dev.	1.69	7.73	2.06	3.39	1.14
Min	1.10	27.6	173.2	71.0	22.6
Max	6.67	57.8	182.5	87.9	29.0
10 Percentile	1.60	32.2	175.4	73.8	23.5
25 Percentile	1.98	35.6	177.3	76.1	23.8
50 Percentile	2.62	43.4	178.4	78.8	24.3
75 Percentile	4.52	48.4	179.9	79.7	25.4
90 Percentile	6.04	52.8	180.7	82.7	26.1

The degree of hair loss, as we already know, ranges from 1.10 to 6.67 and thus spans almost the entire scale. According to these estimates, the men are 28 to 58 years old, 173 to 183 centimeters tall, weigh 71 to 88 kilograms and the BMI ranges from 22.6 to 29.0. Thus, we have a suitable range of variation for all characteristics.

Table 12 shows the correlation between the characteristics.

Table 12. *Correlation among external characteristics.*

	Hair Loss		Age		Height		Weight	
Age	.38	**						
Height	-.47	***	-.30	*				
Weight	-.10		.18		.16			
BMI	.14		.32	*	-.35	**	.87	***

We have already become aware of the special relationship between hair loss and height at the group level. This is even clearer here. As expected, hair loss correlates with age (.38), but the correlation with height is even stronger (-.47).

At the group level, we have seen that the correlation between hair loss and height persists when age is partialed out, but that the significant correlation between age and height disappears when hair loss is controlled for. Exactly the same pattern is found at the level of the targets. The correlation between hair loss and height (-.48) is only marginally reduced by partialing out age (-.41), but the correlation between age and hair loss (.38) is insignificant (-.15) after taking height into account. At both levels, we see that the relationship between height and hair loss is not mediated by estimated age.

Body weight shows no correlation with hair loss and age. Remarkably, there is also no significant correlation between height and weight, although this is inevitable. For example, Plomin (2018) reports a correlation of 0.6. The very high correlation between weight and BMI is trivially due to the calculation method. With increasing age, men appear to be more corpulent (.32).

The structure of the personality domain

Now we turn to the personality domain in the narrower sense. First of all, we make a modification. Antagonism and Lability are negatively valued traits and in relation to men this also applies to a babyface. We have retained these variables as they result from the underlying items. To recognize the relationships more clearly, we have reversed the polarity of these three scales and now refer to them as Agreeableness, Stability and Adult Face. Table 13 shows the significant correlations.

Table 13. *Significant correlations among personality variables.*

	Attract	Male F	Stabil	Adult F	Family	Agreeab	Mood	likeable
Male Face	0.47							
Stability	0.42	0.62						
Adult Face		0.70	0.42					
Family	-0.33	-0.34		-0.36				
Agreeableness	-0.41	-0.55		-0.46	0.89			
Good Mood	-0.29	-0.37		-0.30	0.76	0.76		
likeable			0.31		0.79	0.68	0.78	
Status								

First of all, it is worth taking a look at the last row. *Status*, i.e. the aggregate of the occupational sphere, education and intelligence, shows no correlation at all with the other variables.

In contrast, there are a variety of correlations between the other variables, but these have a clear structure that is easy to discern.

At the top left, *Attractiveness*, *Male Face*, *Stability* and *Adult Face* constitute a 3 x 3 triangle of positive correlations, whereby only the correlation between Attractiveness and Adult Face is not significant.

In the bottom right-hand corner, *Family*, *Agreeableness*, *Good Mood* and *likeable* also form a 3 x 3 triangle of positive correlations and these are particularly close. This means that this block is much closer integrated than the first one.

There are negative relationships between the two blocks; only Stability and likeable vary in the same direction. In terms of a factor analysis, we are thus dealing with negatively correlated factors that are, however, readily distinguishable from one another and whose composition in terms of content paints a meaningful picture.

In addition, there is *Status*, which is independent of both blocks, i.e. forms an orthogonal third factor, so to speak.

External characteristics and personality impressions

Table 14 shows the significant correlations between the external characteristics of hair loss, age, height, weight and BMI on the one hand and the personality factors on the other.

Table 14. *Hair Loss, Height, Weight and BMI and personality impressions.*

	Hair Loss		Age		Height		Weight		BMI	
Attractiveness	-0,40	**	-0,50	***	0,47	***			-0,39	**
Male Face			0,29	*	0,48	***	0,26	*		
Stability					0,27	*				
Adult Face			0,44	***	0,36	**				
Family			0,31	*	-0,45	***				
Agreeableness					-0,54	***				
Good Mood	0,27	*			-0,45	***				
likeable					-0,34	**				
Status			0,27	*						

The table presents a surprising picture. At the level of the judges, *hair loss* correlates with all the attributes except Stability, but at the level of the judged, only the correlation with Attractiveness and Mood is significant, the former negatively and the latter positively. As the next two columns show, the decrease in the number of significant effects cannot be attributed to the smaller sample.

Age correlates negatively with Attractiveness and positively with Adult Face, Family, Male Face and Status.

Height has the most and also the strongest correlates. Positive relationships exist with Male Face, Attractiveness, Adult Face and Stability; negative with Agreeableness, Family, Good Mood, and Likeable. This means that height precisely separates the two blocks and has no relationship to Status.

Weight and *BMI* are of no importance. The former correlates positively with Male Face, the latter negatively with Attractiveness.

In the row-wise perspective, only *Attractiveness* should be touched upon. More attractive men have fuller hair and are thought to be taller, younger and slimmer.

The most striking point in Table 14 is the shift from hair loss to height. Among the judges, hair loss plays the dominant role, whereas among the targets it is height. In addition, there is another remarkable result: If height is partialed out, the correlation between hair loss and Attractiveness drops from -.40 to -.22 and is no longer significant. Furthermore, the correlation between hair loss and Good Mood disappears (from.27 to.06), while the previously non-significant relationship between hair loss and Adult Face becomes significant (from.06 to.28). If Attractiveness is partialed out, however, all significant correlates of height are retained and the strength of the correlation changes only slightly.

The attractiveness stereotype

We are particularly interested in the *attractiveness stereotype* „Who is beautiful is also good". In our case, „beautiful" refers in particular to sexual attractiveness.

Table 15 shows the correlates of Attractiveness from three different perspectives. The first data column shows the simple correlation with the various traits. In the second, hair loss is partialed out and in the third, height.

Table 15. *Significant correlates of Attractiveness. Simple and partial correlations.*

	Attractiveness		Controlled for Hair Loss		Height	
Male Face	0,47	***	0,48	***	0,32	*
Stability	0,42	***	0,46	***	0,37	**
Adult Face					0,22	
Family	-0,33	*	-0,28	*		
Agreeableness	-0,41	**	-0,39	**		
Good Mood	-0,29	*				
likeable					0,28	*
Status						

The first data column makes it clear that there is no comprehensive positive halo effect here. The more attractive men appear to be more masculine and more stable; this is certainly a desirable relationship. On the other hand, however, they appear to be less agreeable, less family-oriented and less cheerful. There is no question of an undifferentiated „He who is attractive is also good".

This picture does not change after controlling for the degree of hair loss. Only the correlation with mood is a bit weaker and no longer significant.

The situation is completely different when height is factored out. Family, Antagonism and Good Mood are no longer significant. This means that the negative side of the attractiveness stereotype is neutralized when height is taken into account. Another curious finding. Significance is retained for Male Face, but the correlation is much weaker. On the other hand, the more attractive men now appear significantly more likeable, although there is no direct correlation in the first place. The same applies to Adult Face, but here the threshold of significance is not reached.

The Attractiveness Malus for Men

So far we have only looked at correlative relationships. Now we look at the absolute level of the ratings. Table 16 shows statistical parameters. When interpreting the data, it is important to remember that the scale does not start at 0, but at 1, so one should mentally subtract one point.

Table 16. *Statistical Parameters of the Personality Variables.*

	Attract	Male F	Stabil	Adult F	Family	Agree	Mood	likeable	Status
Mean	2.35	3.35	3.64	3.89	3.40	3.46	3.36	3.53	3.78
Std. Dev.	0.57	0.44	0.25	0.46	0.36	0.43	0.63	0.42	0.41
Minimum	1.56	2.17	3.00	2.60	2.44	2.49	2.09	2.61	2.65
Maximum	3.84	4.03	4.07	4.75	4.01	4.17	4.35	4.36	4.42
10 Percentile	1.75	2.72	3.30	3.38	2.92	2.94	2.47	2.81	3.19
25 Percentile	1.94	3.10	3.46	3.62	3.20	3.13	2.86	3.38	3.52
50 Percentile	2.18	3.38	3.69	3.93	3.46	3.50	3.36	3.58	3.92
75 Percentile	2.64	3.68	3.81	4.24	3.67	3.82	3.96	3.82	4.10
90 Percentile	3.28	3.87	3.93	4.48	3.87	3.97	4.13	4.01	4.21

Despite the abundance of numbers, the special role of Attractiveness is immediately apparent. No matter which row is considered, the score is always much lower than that of the other variables. The mean value is 2.35, which is well below the middle of the scale. For the other variables, it is between 3.35 and 3.89 and thus comfortably above average. The

difference between Attractiveness and the other variables is at least one point. This corresponds to a quarter of the scale width. Even the 75th percentile of Attractiveness (2.64) is well below the 25th percentile of all other variables (minimum 2.85, maximum 3.62). For Attractiveness, only 8 of the 59 men are above average (not shown in the table). For the other variables, apart from Mood, it is more than three quarters. Overall, the ratings are decidedly positive, but when it comes to Attractiveness, they are a humiliation for most men. What we see here is nothing other than a massive *attractiveness malus*.

To illustrate the huge gap, we have calculated the difference between Attractiveness and the average of the other personality factors. The result is shown in Figure 4.
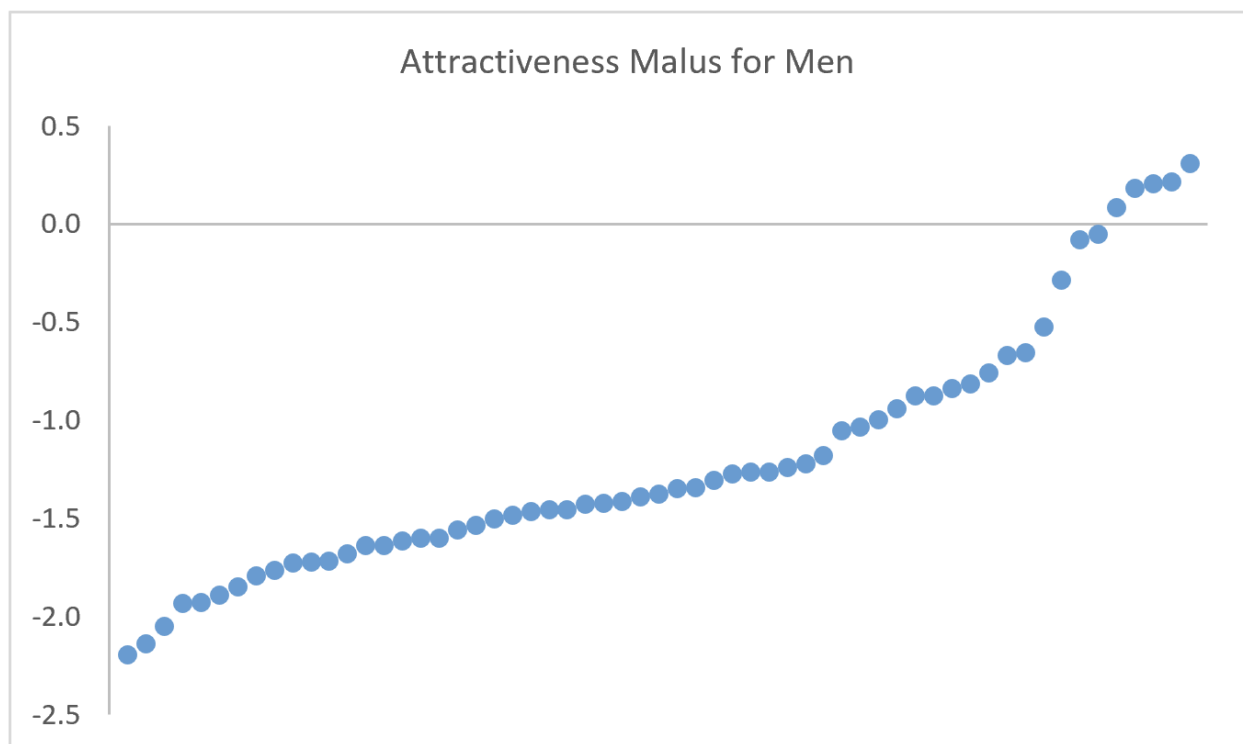
Figure 4. *Attractiveness Malus for Men.*

Only 5 men scored better on attractiveness than in the other areas, and that only slightly. For 2 others, the difference is not worth mentioning. Overall, the maximum is 0.31 points, while the minimum is -2.19. The median is -1.37, the mean -1.20. On a scale that is only 4 points wide, these are gigantic differences.

In order to understand the colossal gap, we need to take a more differentiated look at the Attractiveness factor. This comprises the items *erotic*, *sexy*, *seductive*, *goodlooking* and *successful with women*. These correlate closely with each other, but the absolute level varies greatly. The mean scores are: erotic 1.97, sexy 2.03, seductive 2.12, goodlooking 2.60, successful with women 3.04. The massive degradation therefore relates, as expected, to the sexual component. At the level of the judges, there is no difference between males and females on any of these items and there is also no difference between the German and English versions. But in all cases, there is a strong linear effect of hair loss and the age of the judges ($p < .001$). With increasing hair loss, the rating on each item decreases and the younger the judges, the

more negative the rating.

Figure 5 illustrates the contrast between *sexual attractiveness* (= mean value across erotic, sexy and seductive) and the item *successful with women* for the individual men.
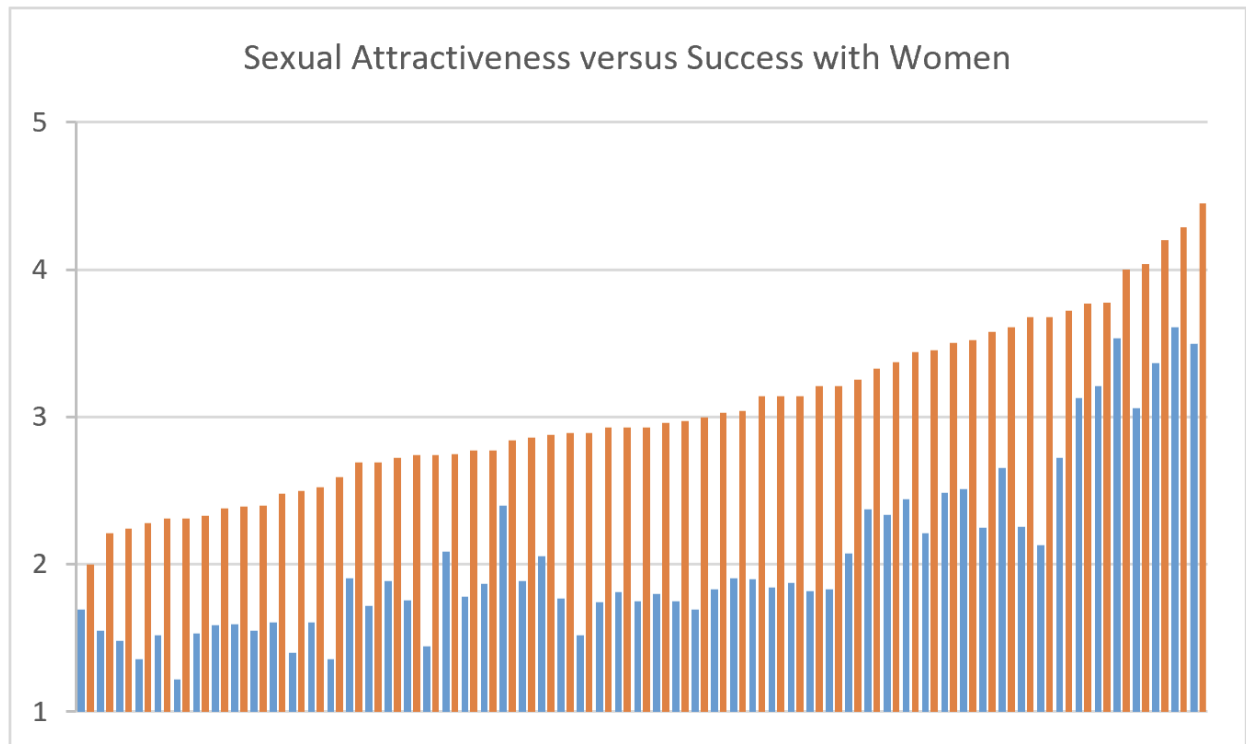

Figure 5. *Sexual Attractiveness Malus for Men.*

The disparity between the two aspects is enormous. On average, the difference is a full point (3.04 vs. 2.04), i.e. a quarter of the scale width. The minimum difference is 0.25 points, the maximum 1.27. With regard to success with women, 26 of the 59 men score above average and 4 above the value of 4. With regard to sexual attractiveness, the numbers are 7 and 0. The massive malus on the attractiveness factor is clearly due to the sexual component. However, it should be pointed out that even in the case of successful with women, the level is well below the other domains. As can be seen in Table 16, the averages there range between 3.35 and 3.89. This means that there is also a malus for successful with women, albeit a weaker one. And for goodlooking (2.60), the malus is considerable. There is therefore good reason to speak of an *Attractiveness Malus for Men*, but it should be emphasized that it is much more pronounced for the sexual component where it is tantamount to degradation.

Effects of Hair Loss, Body Height and Attractiveness

Finally, we look at the three variables from the title of this paper. To shed more light on their effects, we formed two extreme groups with 24 men each. The minimum and maximum for the groups are shown in the top two rows of Table 17. For all dependent variables, the extreme groups were compared using a t-test to determine the effect size. The p values and Cohen's d are also shown in the table. The gray cells mark the attribute on which the extreme groups are based.

Table 17. *Significant effects and effect sizes of Hair Loss, Height and Attractiveness. Extreme groups.*

	Hair Loss		Height		Attractiveness	
	Min	**Max**	**Min**	**Max**	**Min**	**Max**
Lower Group	1.10	2.33	173,2	177,8	1.56	2.12
Upper Group	3.43	6.67	178,8	182,5	2.28	3.84
	p	**d**	**p**	**d**	**p**	**d**
Hair Loss	**< .001**	**4.07**	0.002	0.94	0.004	0.88
Age	0.001	0.99	0.004	0.87	< .001	1.13
Height	< .001	1.11	**< .001**	**-3.47**	< .001	1.44
Weight						
BMI			0.039	0.62	0.005	0.86
Attractiveness	0.003	0.90	0.001	0.99	**< .001**	**2.71**
Male Face			0.005	0.86	0.005	0.86
Stability					0.016	0.72
Adult Face			0.029	0.66		
Family			< .001	1.10		
Agreeableness			< .001	1.54	0.015	0.73
Good Mood	0.020	0.69	0.001	0.99		
likeable			0.017	0.72		
Status						

In terms of *Hair Loss*, the groups are separated by a gap of 1.1 points and the average difference is 3.32. The men in the first group have a full head of hair or hardly noticeable signs of hair loss. The men in the second group show clear signs up to fully developed androgenetic alopecia. The difference between the groups corresponds to an effect size of 4.07. In the world of statistics, these are different universes. In the real world, the differences between levels I and VII are much greater. In the extreme group comparison, only 4 differences are significant at the 5 percent level. However, the effect is very strong for Height (1.11), Age (0.99) and Attractiveness (0.90) and it is also strong for Mood (.69). Some other traits show medium effect sizes, but with such small samples, medium-size effects are not significant.

For *Height*, 9 comparisons are significant. For Agreeableness (1.54), Family (1.10), Good Mood (0.99), Attractiveness (0.99), Hair Loss (0.94), Age (0.87) and Male Face (0.86) the effect is very strong, and there is also a strong effect for likeable (0.72) and BMI (0.62).

For *Attractiveness*, 7 differences are significant and the effect is strong to very strong. Four of them concern biological characteristics. The impact on Male Face (0.86), Agreeableness (0.73) and Stability (0.72) is strong.

Overall, the extreme group comparison makes it clear once again that hair loss, height and attractiveness are more or less strongly related to other areas. And from this perspective too, height is the dominant factor and hair loss plays only a minor role at the level of the individual men.

Discussion

Our investigation has yielded a wealth of findings and these show a multifaceted mosaic. Some findings are in line with our expectations, others are not. Some are surprising and on one issue we are faced with a real conundrum.

We start with the *non-significant results*. First of all, the almost complete absence of interaction effects should be emphasized. This is highly welcome, as it makes interpretation very simple. The interpretation is enormously simplified by three further findings. There are no important differences between the German and English versions. The almost complete absence of sex effects is astonishing. There are practically no differences between the male and female judges and thus there is also no indication of an eigengroup bonus. The age of the judges also plays only a minor role. The expected eigengroup bonus is found for Attractiveness: The older the judges, the more favorable – or better: the less demeaning – the men are rated. However, the opposite is true for Family and Status. There can therefore be *no* question of a consistent *eigengroup bonus*. The fact that an eigengroup bonus only occurred in one specific case, for Attractiveness and age of the judges, is surprising. We found it repeatedly in other face samples, both for sex and age. And the literature offers numerous further instances.

The surprisingly close agreement between the language versions, between men and women and the age groups makes interpretation much easier, but this does not mean that the findings can be generalized without restriction across the Anglo-Germanic sphere and sex and age of the judges. Our participants are not a representative sample of the population as a whole; this is hardly possible in online experiments with voluntary self-selection. The judges predominantly have a background in school and academia and they had an intrinsic motivation to participate. However, there are no obvious reasons to assume that other sections of the population would have made fundamentally different assessments.

Just like the judges, the men who were judged are not a representative sample, in this case of German men. On the contrary, it is a very special group. Men who offer their services via a model catalog are not only a vanishingly small minority, they are also an extreme selection, especially with regard to our central variable, attractiveness. From an objective point of view, few would doubt that such men are much more attractive than the average of their age group. Against this background, our findings are all the more striking when it comes to attractiveness. We will come back to this.

We first look at the *agreement between judges* and the *reliability* of our measurement instruments, which are the prerequisites for a meaningful analysis.

On our central variable, Hair Loss, each judge rated all 59 photographs. The internal consistency is .99. The extent of hair loss is so obvious that 21 judges are sufficient to obtain a perfectly reliable evaluation. Of course, this is not a dermatologic diagnosis, but the correlation with a professional assessment should be very high.[15]

In the main experiment, each participant only assessed a single photograph and the lack of a common frame of reference makes it more difficult for judges to agree. Nevertheless, the concordance here can also be described as at least good, mostly very good and for some variables it is excellent. The order corresponds very well with our own investigations, the current state of research and, to a large extent, common sense.

For the age estimates, the reliability of the group standard is almost perfect (.98) and, according to the conventional rule of thumb, it is also excellent for mood (.95), attractiveness (.94) and status (.91). The lowest, but still good, reliability is found for emotional stability (.75). We have repeatedly observed this in various studies on face perception; and other studies show that this trait is assessed much more concordantly on videos or in live situations.[16] Apparently, dynamic cues are needed to assess emotional stability. The estimation of body height (.78) ranks second to last. This is not surprising, as portrait photos provide only a few clues. All the more astonishing is the fact that the estimated height proves to be extraordinarily important. We will deal with this point in more detail.

The question of the agreement among judges is often raised in connection with attractiveness. The adage „Beauty is in the eye of the beholder" suggests a subjectivity of aesthetic judgment that is not given in this strictness. The eye of the beholder undoubtedly plays a role, but even with single stimulus judgments where there is no common frame of reference, two dozen judges per photo are sufficient to obtain a highly reliable group standard. With 59 photos, however, that's about one and a half thousand. With online experiments, which require minimal effort, this is easy to achieve. If, on the other hand, each judge assesses all the pictures, as in the assessment of hair loss in the supplementary experiment, a highly reliable assessment is obtained with just two dozen.

Concordance among judges is a basic requirement and this is fulfilled to a high degree in our study. Unfortunately, we are unable to answer the highly interesting question of the accuracy of the judgments. The model catalog contains data on age, height and weight and other information about the men. It is a tragedy that it is no longer available. For the degree of hair loss, we have good reason to believe that the group standard would be in excellent agreement with a professional dermatological diagnosis. Age estimates have also been shown to be quite accurate, even if they can be substantially off in individual cases. The correlation between the estimates of height and weight is only.16. After an attenuation correction, which takes into account the reliability of the two estimates, it increases to.20. In the population, the correlation is of course much stronger. This seems to indicate that at least one of the two estimates is quite inaccurate. However, it should be borne in mind that this is not a random sample from the population, so such a conclusion would be premature.[17]

Another aspect of reliability concerns the internal consistency of the personality factors derived from the ratings. First of all, it should be emphasized that the factor structure is in excellent agreement with our expectations and that we have split one of the factors into two, with Family comprising the positive items and Antagonism the negative ones. It is quite possible that the propensity to agree is different for positively evaluated attributes than for negative ones. However, this is not the case in our study. The internal consistency of our factors is mostly good to very good. As expected, the reliability is very high for attractiveness and mood, but the components of status, professional success, intelligence and education also form a consistent composite. The lowest values are found for male face and lability. Remarkably, the babyface item loads only weakly on the Male Face factor and was excluded from the reliability analysis. We included it as a single item.

In the case of Lability, we also saw the lowest concordance between the judges and pointed out that dynamic information would probably be required here. Nevertheless, this factor also exhibits sufficient reliability.

At the level of the judges, *Lability* shows no correlation with the degree of hair loss, language version, sex or age of the judges. At the stimulus level, there is no correlation with hair loss, age, weight and BMI. Only the correlation with height is significant (.27, p <.05).

Another special case is *Status*. The scale has very high reliability (α =.86) and the agreement among the judges is excellent (ICC(1, k) =.91). At the level of the target persons, Status is independent of all other variables with the exception of estimated age (r =.27; p <.05). The absolute level is particularly noteworthy: The mean is 3.78. Only 2 of the 59 men are below the middle of the scale, 25 are even above the value of 4. This means that men are rated particularly favorably in terms of professional success, intelligence and education. Among judges, most of whom have a background in education and academia, this aspect is certainly highly valued. In general, men were given remarkably positive ratings – with the exception of Attractiveness.

In the following, we look at the three key issues that make up the title of this paper, *Hair Loss*, *Body Height* and the *Attractiveness Malus for Men*. In doing so, it will become particularly clear how important it is to distinguish between the level of the judges and the level of the judged. At the level of the judges, hair loss is the dominant variable; at the level of the judged, it is body height. But one thing at a time.

Our main interest is the effect of *hereditary male pattern hair loss* on social perception. This trait is so conspicuous that it is rated with almost perfect concordance (α and ω =.99). In our sample, the entire range from full hair to fully developed androgenetic alopecia is represented. As expected, the degree of hair loss correlates with estimated age (.33). Of particular interest is the correlation between hair status and estimated height. In the population, older men not only have less hair than younger men, they are also de facto smaller. Moreover, since being taller is desirable in men and hair loss is undesirable, the negative correlation between hair loss and estimated height is in line with expectations (-.19). Surprisingly, however, the correlation is not mediated by age.

At the level of the judges, *Hair Loss* is the dominant variable. With the exception of Lability, there is a significant correlation with all other variables, mostly p <.001. This applies even if the age of the judges and the estimates of age and height are taken into account as covariates in a MANCOVA. For Attractiveness, the correlation is monotonic; with each level of hair loss, operationalized by 5 hair groups, the rating decreases. For the other factors the relationship is not monotonic. Depending on the trait, one or the other group deviates more or less strongly from the trend. For details, see Table 9 and Figure 2 and Figure 3. Overall, the group of judges paints the following picture:

- With increasing hair loss, men appear older, smaller and less attractive and their professional status appears to be lower. On the other hand, they appear less antagonistic, more family-oriented, in a better mood and more likeable.

Overall, the picture is coherent and largely consistent with the findings from this area of research and probably also with the expectations of most laypeople.

At the level of the *target persons*, the picture is much coarser. Here the correlation is only statistically significant for age, height, attractiveness and mood. This is partly due to the fact that the sample is much smaller. However, another important reason is that although there is a general basic trend, it does not apply to each man to the same extent. The abundance of hair plays a role, but the men also differ in innumerable other ways. There are always individuals who deviate from the general trend and, depending on the respective characteristic, the deviation can be positive or negative and of varying degrees. This was shown in our laboratory by Stefanie Becker (2003). The stimulus material consisted of photos of 15 men who were presented either bald or with a high-quality toupee. For the criteria intelligence, good husband and father, occupational success and aggressiveness, some men received better ratings when they were seen with a full head of hair, while others scored better when bald. Her conclusion: "This makes it clear that there is something more important than the amount of hair by which we judge people. It is the individual's facial features that play a decisive role in determining the impression a person makes on other people" (p. 74). We would say:

- The face is by far the most important source of first impressions, but the frame – the hair – can modify the perception to a considerable extent.

The combination of physiognomic features, emotional expression and other factors such as hair color, hairstyle, facial hair or glasses can result in different types or clusters.[18] This point is largely ignored in research and we are not aware of any study on hair loss in particular. Such an analysis would go beyond the scope of this paper and must be reserved for a separate study. Here we would like to emphasize how important and beneficial it is to consider the level of the individual stimulus persons. Unfortunately, this perspective is rarely taken into account.

The second variable in the title of this paper is *Body Height*, which presents us with a veritable conundrum. It is not that we did not expect any effects of body height. Quite the reverse, we firmly assumed that height is a salient component of male mate value and that there is a substantial relationship with attractiveness, and we have provided experimental evidence for this in our laboratory.[19] Furthermore, as mentioned several times, there is no question that there is indeed a negative correlation between abundance of hair and body height in the population. The conundrum is the extraordinarily strong effect in this study.

At the *level of the judges*, we concentrated on hair loss. At this point, it should first be noted that height correlates significantly positively with Male Face (.21), Attractiveness (.20), Status (.11) and Antagonism (.10) and negatively with Lability (-.14) and Good Mood (-.09).

The picture is even more pronounced at the *level of the target persons*, where we have re-coded the negatively evaluated traits. The estimated height correlates positively with Male Face (.48), Attractiveness (.47), Adult Face (.36) and Stability (.27). It correlates negatively with Agreeableness (-.54), Family (-.45), Good Mood (-.45) and likeable (-.34). In other words:

- Men who appear taller have a more masculine physiognomy and appear to be more attractive and emotionally stable; and on the other hand, they appear less agreeable, less family-oriented, less good-mooded and less likeable. This is basically the inverted image of hair loss at the level of the judges.

The picture is entirely coherent and nothing about it is surprising. The conundrum is the *strength* of the correlation. At the level of the targets, height has a stronger effect than estimated age and even much more so than the degree of hair loss. The problem lies in the statement „height has an effect". Here one involuntarily thinks of an impact that emanates from body height, but this is surely not the case. When we look at a portrait photo, we certainly don't think „Oh, this man is tall, so he's also attractive, emotionally stable, but rather antagonistic, less family-oriented and... and... and …". The degree of hair loss is immediately apparent in our photographs. They provide countless cues to age and also cues to body weight, mood, male-typical physiognomy, attractiveness and also to some other variables, but they provide probably very few *direct* cues to height. Height was estimated with the second lowest concordance. Nevertheless, it is the most powerful „explanatory" variable in our study – and the one most in need of explanation.

A seemingly plausible explanation is based on two pillars. Firstly, people have an internalized, well-defined height stereotype. Secondly, during the assessment on the 36 personality-descriptive items, a clear impression has become solidified. The subsequent height estimate is based on the interaction of the established internal representation and the impression just formed. This hypothesis could be tested, for example, with the following experimental set-up. Group A, as in our experiment, first assesses the stimulus person on numerous personality traits and then estimates age, height and weight. Group B first estimates height on a separate webpage and then proceeds like group A on the next webpage. Group C proceeds in the same way as group A, but without estimating height. Afterwards, they complete a distraction task and then estimate the body height on a separate page. For group B, the „effect" of the height estimation should be weaker, because the impression has not yet solidified. For group C, it should be lower if the distraction task has successfully weakened the personality impression. However, we also know that people form an impression of various personality traits after just 40 milliseconds and that this impression changes only slightly even after longer exposure. Against this background, the three test conditions might not show any difference at all. This would suggest that the height stereotype is so strongly entrenched that it needs no further support.

The third point in the title of our paper is the *attractiveness malus for men*. Here we should first address the *attractiveness stereotype*. It is by no means the case that the evaluations follow the motto „He who is attractive is also good". In a positive sense, attractiveness is linked to a taller and slimmer stature, a male-typical physiognomy and greater emotional stability, and more attractive men appear younger and have a fuller head of hair. On the other hand, more attractive men appear less family-oriented, less socially agreeable and less cheerful and the composite of professional status, intelligence and education shows no correlation with attractiveness. Thus, there can be no talk of an undifferentiated halo effect.

The interesting point is the striking contrast between attractiveness and the other traits. Overall, the men are rated very favourably. For the other traits, the average rating is 0.35 to 0.89 points above the middle of the scale. On a scale that is only 4 points wide, these are excellent scores. With the exception of mood, more than three-quarters of the men scored above average, and even more than 90 percent in the case of emotional stability, non-babyface and status. In contrast, the rating for attractiveness is 0.65 points *below* the midpoint of the scale. Only 8 of the 59 men scored above it. That is a devastating verdict. And this is all the more serious because the participants rated the other aspects so positively. The

difference is at least one scale point. The cleavage becomes incomprehensible when the common background of the stimulus persons is taken into account.

Our sample is not a selection from the lower attractiveness range. The opposite is the case. Without a doubt, the majority of men whose services are advertised via a model catalog are more attractive than their age cohort. Our sample contains different types and the men are not all equally attractive, a few may even be below average, but taken as a whole this group would certainly perform much better than a random selection of men of the same age.

The conclusion is that men – at least middle-aged men – are denied attractiveness. This is the same in the German version as in the English version and, surprisingly, it makes no difference whether the judges are men or women. Only the age of the judges plays a role and, as expected, the ratings by older people are milder than those by younger people. But even the oldest group, which is roughly in the age range of the stimulus persons, rated the men as clearly below average (2.63).

The bafflingly strong attractiveness malus can be attributed to a considerable extent to the sexual component. In this respect, the verdict is abysmal. But even on the item goodlooking, which is aimed rather at the overall aesthetic evaluation without direct reference to the sexual aspect, the value of 2.60 is well away from the middle of the scale. Even for the item success with women, which relates to the social effects on others – and should, according to the intention, be independent of one's own judgment of attractiveness – the value is only 3.04. If a survey were conducted without photos, it is highly likely that most people would agree that men who work in the modeling business are more successful with women than the average of their age group.

- There is *a massive attractiveness malus for middle-aged men*. Although this is largely due to the sexual component, it clearly goes beyond this.

In our study on effects of the toupee, we said: „If there were an attractiveness malus for women, there would be a roaring, ear-splitting outcry. The derogatory judgment of male attractiveness is usually not even alluded to" (Henss, 2024). With the present study, we once again draw attention to the degradation of male attractiveness.

The title of this paper highlights the main points. Obviously, hair loss and body height are very salient attributes for men, but their psychological impact has been sparsely researched, and the attractiveness malus for men has hardly been addressed. There is considerable need for research on all three issues. Research into personality perception would be well advised to pay much more attention to men, including middle-aged and older men. Men make up almost half of the population and in advanced societies, the middle and older age groups are much more prevalent than the younger ones. Large parts of psychological research have little to say about them. Men are interesting subjects, even if their sexual attractiveness may not be breathtaking.

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Note: The data set is available on request.

Footnotes

[1] These and many more fascinating facts about face perception can be found in the highly readable book „Face Value. The irresistible influence of first impressions" by Alexander Todorov (2017). Also see Alexander (2024), Langlois et al. (1987, 1991), Landau (1989), Liang, Zebrowitz and Zhang (2010), Rhodes and Zebrowitz (2002), Prinicpe and Langlois (2011), Zebrowitz (1997).

[2] Jaeger et al. (2024), Todorov, (2017).

[3] On the broad spectrum of modern methods see for example Asfour, Cranwell and Sinclair (2023), Kelly, Blanco and Tosti (2016), Ly et al. (2023), Nestor et al. (2021), Ntshingila et al. (2023), Qi and Garza (2014).

[4] On the psychological impact of hair loss on those affected, see for example Alfonso et al. (2005), Budd et al. (2000), Cash (2009), Frith and Jankowski (2023).

[5] The article can be downloaded at
https://www.researchgate.net/publication/244915177_Social_Perceptions_of_Male_Pattern_Baldness_A_Review

[6] Case and Paxson (2008), Harper (2000), Judge and Cable (2004), Rauch (1995), Roberts and Herman (1986), Social (2024), Stulp and Barrett (2016), Tyrrell et al. (2016), Vuoksimaa et al. (2018), Wang et al. (2020).

[7] Beigel (1954), Gillis and Avis (1980), Graziano, Brothen and Berscheid (1978), Pisanski et al. (2022), Stulp, Buunk and Pollet (2013), Stulp, Simons, Grasman and Pollet (2016)

[8] Warping changes the geometry, but the texture remains unchanged.

[9] One half rated attractiveness first and then estimated height, while the other half did the reverse. The order had no effect. Thus, the results cannot be attributed to the transparency of the research hypotheses.

[10] In our review (Henss, 2001) we have outlined some results of a preliminary analysis. The current analysis is based on a rigorous quality control of the dataset and an extensive analysis that goes far beyond the preliminary one and in particular takes into account the age of the judges and the estimates of age, height and weight.

[11] In our own studies and those of many others, we have repeatedly found that members of one's own group are rated more favorably than members of another group. This does not necessarily have to be the case in absolute terms, but at least in relative terms it can be observed very often. This applies to both the age and sex of the judges. We term the preference for the ingroup the „eigengroup bonus".

[12] Batres and Shiramizu (2022), Dion, Berscheid, Walster (1972), Eagly, Ashmore, Makhijani and Longo (1991).

[13] The classic article on measures of inter-rater agreement is Shrout and Fleiss, 1979; a more recent overview is Shrout and Lane (2012).

[14] On average there were 27.4 judges per photo, but due to random assignment the minimum is 22 and the maximum is

33.

[15] On the very high agreement between the self-assessment of hair loss patients using the Norwood scheme and a dermatological diagnosis, see Taylor, Matassa, Leavy and Fritschi (2004).

[16] Borkenau and Liebler (1992), Todorov (2017).

[17] In particular, it should be borne in mind that the range for both variables is severely restricted: height [173.2 – 182.5], weight [71.0 – 87.9], see Table 11.

[18] We have shown this, for example, using a sample of women with above-average attractiveness (Henss, 1998, pp. 296-298).

[19] Henss (1993), Schmidt (2001).

References

- Alexander (2023). *The neuroscience of facial attractiveness*. https://datepsychology.com/the-neuroscience-of-facial-attractiveness/

- Alfonso, M., Richter-Appelt, H., Tosti, A., Sanchez Viera, M. & García, M. (2005). The psychosocial impact of hair loss among men: a multinational European study. *Current Medical Research and Opinion*, 21:11, 1829-1836. https://doi.org/10.1185/030079905X61820

- Asfour, L., Cranwell, W. & Sinclair, R. (2023). Male androgenetic alopecia. *National Library of Medicine. National Center for Biotechnology Information*. https://www.ncbi.nlm.nih.gov/books/NBK278957/

- Batres, C. & Shiramizu. V. (2022). Examining the „attractiveness halo effect" across cultures. *Current Psychology* https://doi.org/10.1007/s12144-022-03575-0

- Becker, S. (2003). *Zur Eindruckswirkung des Haarausfalls beim Mann*. Unpublished Diploma Thesis at the Fachrichtung Psychologie, University of the Saarland, Saarbrücken.

- Borkenau, P. & Liebler, A. (1992). The cross-modal consistency of personality: Inferring strangers' traits from visual or acoustic information. *Journal of Research in Personality*, 26, 183-204.

- Budd, D., Himmelberger, D., Rhodes, T., Cash, T.E. & Girman, C.J. (2000). The effects of hair loss in European men: a survey in four countries. *European Journal of Dermatology*, 10 (2), 122-7.

- Case, A. & Paxson, C. (2008). Stature and status: Height, ability, and labor market outcomes. *Journal of Political Economy*, 116 (3):499-532. https://doi.org/10.1086/589524

- Cash, T. (2009). Attitudes, behaviors, and expectations of men seeking medical treatment for male pattern hair loss: Results of a multinational survey. *Current Medical Research and Opinion*, 25 (7), 1811-1820 https://doi.org/10.1185/03007990903005201

- Costa, M., & Maestripieri, D. (2023). Physical and psychosocial correlates of facial attractiveness. *Evolutionary Behavioral Sciences*. Advance online publication. https://doi.org/10.1037/ebs0000331

- Dion, K., Berscheid, E. & Walster, E. (1972). What is beautiful is good? *Journal of Personality and Social Psychology*, 24, 285-290.

- Eagly, A.H., Ashmore, R.D., Makhijani, M.G., & Longo, L.C. (1991). What is beautiful is good, but: A meta-analytic review of research on the physical attractiveness stereotype. *Psychological Bulletin*, 110, 109-128.

- Frith, H. & Jankowski, G.S. (2023). Psychosocial impact of androgenetic alopecia on men: A systematic review and meta-analysis, *Psychology, Health & Medicine*. https://doi.org/10.1080/13548506.2023.2242049

- Gillis, J.S. & Avis, W.E. (1980). The Male-Taller Norm in mate selection. *Personality and Social Psychology Bulletin*, 6 (3), 396-401. https://doi.org/10.1177/014616728063010

- Graziano, W., Brothen, T. & Berscheid, E. (1978). Height and attraction: Do men and women see eye-to-eye? *Journal of Personality*, 46 (1), 128-145. https://doi.org/10.1111/j.1467-6494.1978.tb00606.x

- Guthrie, R. D. (1976). *Body hot spots. The anatomy of human social organs and behavior*. New York: Van Nostrand Reinhold Company.

- Harper, B. (2000). Beauty, stature and the labour market: A British cohort study. *Oxford Bulletin of Economics and Statistics*, 62, 771-800. https://doi.org/10.1111/1468-0084.0620s1771

- Henss, R. (1989). Attraktivität und Körpergröße. Eine Pilotstudie. Saarbrücken: Universität des Saarlandes. *Arbeiten der Fachrichtung Psychologie*, Nr. 140.

- Henss, R. (1992). *„Spieglein, Spieglein an der Wand..." Geschlecht, Alter und physische Attraktivität*. Weinheim: Psychologie Verlags Union.

- Henss, R. (1993). Kontexteffekte bei der Beurteilung der physischen Attraktivität. In Hassebrauck, M. & Niketta, R. (Eds.). *Physische Attraktivität*. Göttingen: Hogrefe, 61-94.

- Henss, R. (1998). *Gesicht und Persönlichkeitseindruck*. Göttingen: Hogrefe. [Reprint: Henss, R. (2020). Gesicht und Persönlichkeitseindruck. Saarbrücken: Dr. Ronald Henss Verlag. Freely available as PDF https://www.researchgate.net/publication/339147401_Gesicht_und_Personlichkeitseindruck

- Henss, R. (2001). Social Perceptions of Male Pattern Baldness. A review. *Dermatology and Psychosomatics / Dermatologie und Psychosomatik*, 2 (2), 63-71. https://doi.org/10.1159/000049641 Freely available at https://www.researchgate.net/publication/244915177_Social_Perceptions_of_Male_Pattern_Baldness_A_Review

- Henss, R. (2017). *Die Körpergröße deutscher Männer von 1896 bis 1996*. https://splitter1.wordpress.com/2017/07/15/koerpergroesse-maenner-deutschland/

- Henss, R. (2024). „Toupee or not Toupee?" Sic (et Non). Social perceptions of Male Pattern Baldness (Androgenetic Alopecia). *Qeios*, https://doi.org/10.32388/UYKBF4

- Jaeger, B., Sleegers, W.W.A., Stern, J., Penke, L. & Jones, A.L. (2024). Testing perceivers' accuracy and accuracy awareness when forming personality impressions from faces. *European Journal of Personality*. https://doi.org/10.1177/08902070231225728

- Judge, T.A. & Cable, D.M. (2004). The effect of physical height on workplace success and income: Preliminary test of a theoretical model. *Journal of Applied Psychology*, 89 (3), 428-41. https://doi.org/10.1037/0021-9010.89.3.428

- Kelly, Y., Blanco, A. & Tosti, A. (2016). Androgenetic Alopecia: An update of treatment options. *Drugs*, 76, 1349-1364. https://doi.org/10.1007/s40265-016-0629-5

- Koo, T.K. & Li, M.Y. (2016). A guideline of selecting and reporting Intraclass Correlation Coefficients for reliability research. *Journal of Chiropractic Medicine*, 5 (2), 155-163, https://doi.org/10.1016/j.jcm.2016.02.012

- Landau, T. (1989). *About faces*. New York: Bantam Doubleday Dell Publishing Group.

- Langlois, J.H., Ritter, J.M., Roggman, L.A., & Vaughn, L.S. (1991). Facial diversity and infant preferences for attractive faces. *Developmental Psychology*, 27, 79-84.

- Langlois, J.H., Roggman, L.A., Casey, R.J., Ritter, J.M., Rieser-Danner, L.A. & Yenkins, V.Y. (1987). Infant preferences for attractive faces: Rudiments of a stereotype? *Developmental Psychology*, 23, 363-369.

- Liang, X., Zebrowitz, L.A. & Zhang, Y. (2010). Neural activation in the „reward circuit" shows a nonlinear response to facial attractiveness, *Social Neuroscience*, 5:3, 320-334, https://doi.org/10.1080/17470911003619916

- Ly, N.Y., Fruechte, S., Hordinsky, M.K., Sadick, N., Arruda, S. & Farah, R.S. (2023). Medical and procedural treatment of androgenetic alopecia. – Where are we? *Journal of the American Academy of Dermatology*, 2023; 89:S36-9. https://www.jaad.org/article/S0190-9622(23)00768-5/pdf

- Montepare, J.M. & Zebrowitz, L.A. (1998). Person perception comes of age: The salience and significance of age in social judgments. *Advances in Experimental Social Psychology*, 39, 93-161.

- Muscarella, F. & Cunningham, M.R. (1996). The evolutionary significance and social perception of male pattern baldness and facial hair. *Ethology and Sociobiology*, 17, 99-117.

- NCD (2016). *A century of trends in adult human height* NCD Risk Factor Collaboration (NCD-RisC). https://doi.org/10.7554/eLife.13410

- Nestor, M.S., Ablon, G., Gade, A., Han, H. & Fischer, D.L. (2021). Treatment options for androgenetic alopecia: Efficacy, side effects, compliance, financial considerations, and ethics. *Journal of Cosmetic Dermatology*, 00:1-23. https://doi.org/10.1111/jocd.14537

- Norwood, O'T.T. (1975). Male pattern baldness: Classification and incidence. *Southern Medical Journal*, 68, 1359-1365.

- Ntshingila, S., Oputu, O., Arowolo, A.T. & Khumalo, N.P. (2023). Androgenetic alopecia: An update. *Journal of the American Academy of Dermatology*, JAAD Int. 13:150-8. https://doi.org/10.1016/j.jdin.2023.07.005

- Parducci, A. (1965). Category-judgment: A range-frequency model. *Psychological Review*, 72, 407-418.

- Parducci, A. (1982). Category ratings: Still more contextual effects! In B. Wegener (Ed.). *Social attitudes and psychophysical measurement* (pp. 89-105). Hillsdale, NJ. Erlbaum.

- Pisanski, K., Fernandez-Alonso, M., Díaz-Simón, N., Oleszkiewicz, A., Sardinas, A., Pellegrino, R., Estevez, N., Mora, E.C., Luckett, C.R. & Feinberg, D.R. (2022) Assortative mate preferences for height across short-term and long-term relationship contexts in a cross-cultural sample. *Frontiers in Psychology*, 13:937146. https://doi.org/10.3389/fpsyg.2022.937146

- Plomin, R. (2018). *Blueprint. How DNA makes us who we are* London: Allen Lane.

- Poß, I. (2002). *Kindchenschema und Persönlichkeitseindruck*. Unpublished Diploma Thesis at the Fachrichtung Psychologie, University of the Saarland, Saarbrücken.

- Principe, C.P. & Langlois, J.H. (2011). Children and adults use attractiveness as a social cue in real people and avatars. *Journal of Experimental Child Psychology*, 115 (3), 590-597, https://doi.org/10.1016/j.jecp.2012.12.002

- Qi, J. & Garza, L.A. (2014). An overview of alopecias. *Cold Spring Harbor Perspectives in Medicine*, 4 (3). https://doi.org/10.1101/cshperspect.a013615

- Rauch, J. (1995). Short guys finish last. *The Economist*, December 23, 1995. https://www.jonathanrauch.com/jrauch_articles/height_discrimination_short_guys_finish_last/

- Rhodes, G. & Zebrowitz, L.A. (2002). *Facial attractiveness. Evolutionary, cognitive, and social perspectives*. Westport, Connecticut: Ablex.

- Roberts, J.V. & Herman, C.P. (1986). The psychology of height: An empirical review. In Herman, C.P., Zanna, M.P & Higgins, E.T. (Eds.). *Physical appearance, stigma, and social behavior. The Ontario symposium* (Vol. 3, p. 113-140). Hillsdale, NJ. Erlbaum.

- Schmidt, I. (2001). *Multiple Kriterien der Partnerwahl. Was Frauen wünschen*. Unpublished Diploma Thesis at the Fachrichtung Psychologie, University of the Saarland, Saarbrücken.

- Shrout, P.E., & Fleiss, J.L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin, 86* (2), 420-428. https://doi.org/10.1037/0033-2909.86.2.420

- Shrout, P.E., & Lane, S.P. (2012). Reliability. In H. Cooper, P.M. Camic, D.L. Long, A.T. Panter, D. Rindskopf, & Sher, K.J. (Eds.), *APA handbook of research methods in psychology, Vol. 1. Foundations, planning, measures, and psychometrics* (pp. 643-660). American Psychological Association. https://doi.org/10.1037/13619-034

- Social.com (2024). *15 CEO height statistics that are fascinatingly weird 2024*. https://www.soocial.com/ceo-height-statistics/ [2024/04/20)

- Stulp, G. & Barrett, L. (2016). Evolutionary perspectives on human height variation. *Biological Review*, 91, 206-234. https://doi.org/10.1111/brv.12165

- Stulp, G., Buunk, A.P., and Pollet, T.V. (2013). Women want taller men more than men want shorter women. *Personality and Individivdual Differences*, 54, 877-883. https://doi.org/10.1016/j.paid.2012.12.019

- Stulp, G., Simons, M.J.P., Grasman, S. & Pollet, T.V. (2017). Assortative mating for human height: A meta-analysis. *American Journal of Human Biololgy*, 29:e22917. https://doi.org/10.1002/ajhb.22917

- Taylor, R., Matassa, J., Leavy, J.E. & Fritschi, L. (2004). Validity of self reported male balding patterns in epidemiological studies. *BMC Public Health*, 4 60. https://doi.org/10.1186/1471-2458-4-60

- Todorov, A. (2017). *Face value. The irresistible influence of first impressions*. Princeton, NJ: Princeton University Press.

- Tyrrell, J., Jones, S.E., Beaumont, R., Astley, C.M., Lovell, R., Yaghootkar, H. et al. (2016). Height, body mass index, and socioeconomic status: Mendelian randomisation study in UK Biobank. *BMJ*, 2016; 352:i582 https://doi.org/10.1136/bmj.i582

- Vuoksimaa, E., Panizzon, M.S., Franz, C.E. et al. (2018). Brain structure mediates the association between height and cognitive ability. *Brain Structure and Function*, 223, 3487-3494. https://doi.org/10.1007/s00429-018-1675-4

- Wang, J., Chen, Q., Chen, G., Li, Y., Kong, G. & Zhu, C. (2020). What is creating the height premium? New evidence from a Mendelian randomization analysis in China. *PLoS ONE*, 15 (4): e0230555.

- Zebrowitz, L.A. (1997). *Reading faces. Windows to the soul?* Boulder, CO: Westview Press.

- Zebrowitz, L.A. (2011). Ecological and social approaches to face perception. In Calder, A., Haxby, J.V., Johnson, M. & Rhodes, G. (Eds.). *Handbook of face perception*. Oxford: Oxford University Press.