Person Perception from Faces: A Cognitive Perspective

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Abstract

Physiognomy constitutes an important factor in identifying and inferring others' character and behavioral tendencies, yet its underlying mechanisms require further elaboration. Based on the general cognitive perspective and the evolutionary cognitive perspective, and proceeding from both local and holistic features of physiognomy, this paper expounds upon the process of person perception through physiognomy and its consequential effects. From the general cognitive perspective, physiognomy influences the identification of individual traits via different cognitive processing systems, with the identified traits playing a pivotal role in judgments (ability, income, social hierarchy) and decisions (trust, hiring, and promotion). From the evolutionary cognitive perspective, physiognomy operates through distinct evolutionary selection mechanisms to identify individual health and genetic conditions, thereby exerting significant influence on judgments (marital satisfaction, happiness, life satisfaction) and mate selection decisions. Furthermore, the magnitude of physiognomy' s influence depends on factors such as the context in which the individual is situated and individual characteristics. Future research should examine the interactive effects among different physiognomic features, explore the boundary conditions of person perception through physiognomy, leverage big data analysis to enhance the external validity of physiognomy research, investigate the effects of postnatally modified appearance, and conduct studies on person perception through physiognomy in indigenous contexts, thereby enriching the research content of physiognomy and constructing a more systematic theoretical framework for physiognomy research.

Full Text

Identifying People by Physiognomy: Explanations from a Cognitive Perspective

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Abstract

Physiognomy is an important factor in identifying and inferring others' character traits and behavioral tendencies, yet its underlying mechanisms require further elaboration. Based on general cognitive and evolutionary cognitive perspectives, this paper examines the process and effects of physiognomy-based judgment, considering both local and holistic facial features. From a general cognitive perspective, physiognomy influences trait recognition through distinct cognitive processing systems, with recognized traits playing crucial roles in judgments (of ability, income, and social hierarchy) and decisions (regarding trust, recruitment, and promotion). From an evolutionary cognitive perspective, physiognomy serves to evaluate individual health and genetic conditions through various evolutionary selection mechanisms, thereby significantly affecting judgments (of marital satisfaction, happiness, and life satisfaction) and mate selection decisions. Moreover, the impact of physiognomy depends on contextual factors and individual characteristics. Future research should investigate interactions among different physiognomic features, explore boundary conditions of physiognomy-based judgment effects, enhance external validity through big data analytics, examine the effects of modified physiognomy, and conduct studies in indigenous contexts to enrich physiognomy research and build a more systematic theoretical framework.

Keywords: physiognomy, five sense organs, facial width-to-height ratio, facial attractiveness, general cognition, evolutionary cognition

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Physiognomy generally refers to an individual' s facial appearance characteristics, comprising both local and holistic features (Xiao et al., 2015; Stepanova et al., 2021). Local features include the five sense organs and hair (Brambilla et al., 2018; Chen et al., 2018; Giacomin & Rule, 2019), while holistic features encompass objective metrics like facial width-to-height ratio and subjective perceptions such as facial attractiveness (Deska & Hugenberg, 2018; Mello et al., 2020). People habitually rely on physiognomy to identify and infer others' character and behavioral tendencies. For instance, in ancient Chinese physiognomy, "ears reaching the shoulders" was considered a typical feature of imperial visage. In Western cartoon design, kind princesses always have large eyes, while wicked witches invariably possess sharp, hooked noses. Although existing research confirms that physiognomy plays important roles in trait recognition, mate selection, recruitment, and competition versus cooperation (Guo et al., 2020; Palumbo et al., 2017; Shen et al., 2020; Stirrat et al., 2012), current physiognomy research faces challenges including fragmented theoretical perspectives, contradictory findings, and cross-cultural applicability issues.

First, researchers have attempted to explain physiognomy effects through cognitive dual-system theory, social information processing theory, stereotypes, halo effect, status generalization theory, and evolutionary intrasexual competition theory. However, these theoretical perspectives remain fragmented, lacking a

systematic analytical framework that limits scholars'ability to deeply explore the underlying mechanisms of physiognomy-based judgment. Second, contradictory conclusions exist regarding physiognomy' s effects (Pillemer et al., 2014; Stoker et al., 2016). Some studies demonstrate that physiognomy can predict traits and influence inference and decision-making (Jaeger et al., 2020; Santo-Tomas, 2020), while others critique these findings, arguing that subjective judgments based solely on physiognomy are inaccurate and questioning whether existing conclusions reflect spurious correlations (Steed & Caliskan, 2021). Finally, most empirical physiognomy research has been conducted in Western cultural contexts, and these findings may not generalize to Chinese settings.

Based on these considerations, this paper systematically reviews existing physiognomy research from general cognitive and evolutionary cognitive perspectives, elaborating on how local and holistic physiognomic features influence cognition, judgment, and decision-making, and examining the mechanisms and boundary conditions of these effects. The aim is to provide theoretical guidance for physiognomy research in Chinese contexts.

Physiognomy: Features of the Face

Both "face" and "physiognomy" relate to facial appearance, and most studies do not distinguish them in detail, yet they differ essentially. Conceptually, "face" primarily refers to the frontal portion of an individual' s head, spanning horizontally between the ears and vertically from forehead to chin. A face consists of objectively existing components such as ears, eyes, mouth, and nose (Xiao et al., 2015), without involving subjective inference or emotional coloring. Physiognomy, by contrast, refers to facial features—including both component-level and holistic characteristics—that help distinguish individuals and enable observers to infer personality traits and behavioral tendencies, which constitutes the core of physiognomy research (Hassin & Trope, 2000).

Local Features of Physiognomy

The five sense organs—ears, eyebrows, eyes, nose, and mouth—represent physiognomy in its narrow sense and serve as information sources for first impressions. Ear descriptions typically include overall size and lobe size (Grammaticos et al., 2019). Eyebrow descriptions focus on thickness and shape (Giacomin & Rule, 2019). Eye characteristics primarily encompass size and pupil diameter (Lee & Anderson, 2017; Van Breen et al., 2018). Nose descriptions mainly involve overall shape, such as prominence and flatness (Ma et al., 2015). Mouth characteristics include size and width (Re & Rule, 2016; Talamas et al., 2016). Additionally, hair density directly affects physiognomy observation (Blaker et al., 2020; Muscarella & Cunningham, 1996).

Holistic Features of Physiognomy

Facial width-to-height ratio (fWHR) represents an important objective metric for holistic physiognomy, defined as the ratio between the horizontal distance between the most outwardly protruding points of the cheekbones and the vertical distance between the upper lip and the upper eyelid (Lefevre et al., 2013). Simply put, it is the ratio of cheekbone width to the distance between mouth and mid-eyebrow (Hehman et al., 2015). Beyond objective fWHR, physiognomy-based judgment also involves subjective perceptions such as facial attractiveness, which represents an aesthetic evaluation of appearance and a judgment of target characteristics (Hu et al., 2018). Facial attractiveness concerns the degree to which positive emotions evoked in observers by a target' s face motivate approach behavior, emphasizing observers' subjective cognition based on the face owner' s physiognomy as an expression of personal aesthetics.

Theoretical Perspectives on Physiognomy-Based Judgment

Physiognomy-based judgment involves individuals generating cognitive inferences from physiognomic cues to predict behavior. Research primarily adopts general cognitive and evolutionary cognitive perspectives. Representative theories in the general cognitive perspective include stereotypes, halo effect, status generalization theory, and social information processing theory, which focus on specific processing mechanisms within cognitive dual-system theory. The evolutionary cognitive perspective involves evolutionary theory, evolutionary intrasexual competition theory, and good genes theory, which explain evolutionary selection mechanisms preserved through natural and sexual selection to meet evolutionary needs.

General Cognitive Perspective

The general cognitive perspective emphasizes information processing approaches to studying cognition formation. Individual preferences for physiognomy may represent byproducts of brain processing of perceptual or cognitive information (Rhodes, 2006). During perception and cognition formation, two systems process physiognomic information. The first is a rapid, automatic processing system that requires no conscious effort and directly activates stereotypes based on physiognomy. Stereotypes refer to relatively stable cognitions or expectations about social groups accumulated through social experience. In this fast-processing system, fixed cognitions about certain physiognomic features stored in memory are automatically activated, prompting observers to make rapid perceptions and judgments without deliberation. For example, because infants possess traits such as innocence, kindness, and vulnerability, observers judging individuals with "baby faces" readily associate them with positive qualities, generating favorable impressions, protective instincts, and approach desires (Ladenheim & LaViers, 2021; Zheng et al., 2018).

The second is a slower, controlled processing system that requires conscious ef-

fort and engages rational thinking based on physiognomic cues and judgment criteria. In this slow-processing system, mature experience and general knowledge about physiognomy become activated, easily producing associations that generate halo effects and status generalization effects (Wang et al., 2020; Lee et al., 2015), thereby influencing cognition and behavior. From a general cognitive perspective, since psychological processes underlying cognition cannot be directly observed, they must be inferred from input and output information. Consequently, halo effects spread physiognomic perceptions to holistic judgments, creating subjective impressions that overgeneralize from limited information. For instance, research finds that individuals with high facial attractiveness are perceived as having more positive attitudes (Scholz & Sicinski, 2015). Regarding status generalization, physiognomy represents a typical status characteristic in status generalization theory. Individuals process physiognomic information to generate cognitions, during which these status characteristics become generalized as symbols of ability. This leads to higher facial attractiveness being associated with greater perceived competence.

Additionally, in the slow-processing system, individuals screen and control physiognomic information through matching with judgment criteria, generating cognitions that influence behavior (Evans & Stanovich, 2013; Inzlicht et al., 2014). Social information processing theory posits that attitudes and behaviors are substantially influenced by surrounding social environments. Therefore, after screening, processing, and interpreting specific physiognomic information based on certain rules, individuals determine their attitudes and actions. For example, Blaker et al. (2020) found that in wartime contexts, individuals select leaders based on physiognomic information. Specifically, observers perceived leaders with dense hair as having health and intelligence advantages, making them more likely to win wars, thereby generating selection preferences for such leaders.

Notably, these two cognitive processing systems are not entirely parallel or independent; they exhibit interactive relationships. The slow-processing system sometimes influences the fast-processing system, but due to processing speed differences, final responses typically depend on the fast-processing system. Figure 1 [Figure 1: see original paper] illustrates the physiognomy-based judgment process from a general cognitive perspective.

Evolutionary Cognitive Perspective

Compared with the general cognitive perspective, the evolutionary cognitive perspective emphasizes that during information processing, individuals identify cues relevant to health, survival, reproduction, and environmental adaptation based on evolutionary needs. Through natural and sexual selection mechanisms, individuals use genes as the original driving force to identify physiological conditions, thereby influencing behavior. On one hand, during natural selection, physiognomic variations detrimental to survival are gradually eliminated while advantageous variations are preserved, eventually producing new average facial features (Johnston et al., 2001). On the other hand, during sexual selec-

tion, individuals assess observers' physiological health, genetic status, and other reproduction-related resources based on physiognomy to determine whether they meet evolutionary needs, providing support for subsequent behavioral decisions (Johnston, 2000).

Evolutionary theory, governed by the principle of "survival of the fittest," holds significant importance for explaining physiognomy' s influence mechanisms. It demonstrates that observers can make judgments based on physiognomy even with limited personal experience. Due to survival competition pressure from natural selection, factors advantageous for meeting evolutionary needs are gradually preserved. For example, in violent conflict environments, individuals with high fWHR are less vulnerable to fatal blows and more likely to win conflicts (Stirrat et al., 2012). Thus, fWHR becomes a favorable factor preserved through natural selection and preferred by humans. Deaner et al. (2012) analyzed WWII soldier records, confirming that fWHR effectively predicts soldiers' health status.

Sexual selection represents another crucial mechanism in species evolution, manifesting as intrasexual competition and intersexual selection. First, according to "survival of the fittest," individuals must adapt to competitive environments to maintain reproductive advantages. Evolutionary intrasexual competition theory suggests that during biological evolution, individuals compete with same-sex others to acquire reproduction-related resources (Buss, 1988). For example, Zhuang and Wang (2015) discussed how women' s menstrual cycles relate to grooming behavior, noting that women in ovulation periods enhance their attractiveness to outperform same-sex competitors and gain quality mates, maximizing reproductive benefits.

Second, good genes theory explains physiognomy' s important role in sexual selection from a genetic perspective. Within species, individual differences exist, and different physiognomies represent varying levels of genetic status and physiological health. Individuals with high facial attractiveness possess healthy genes and reproductive advantages (Gangestad & Simpson, 2000; Little et al., 2007). Henderson and Anglin (2003) also demonstrated that facially attractive individuals are perceived as healthier, longer-lived, and more likely to survive competitive environments. Stephen et al. (2017) used geometric morphometrics to identify health-related facial features, validating physiognomy as an effective cue for physiological health assessment. Individuals desire to mate with partners possessing good genes and health conditions to pass these advantageous traits to offspring, generating preferences for facial attractiveness during mate selection (Little et al., 2011). Consequently, individuals with high facial attractiveness are perceived as having genetic advantages in reproduction, making them more preferred mates.

The evolutionary cognitive perspective' s natural and sexual selection mechanisms primarily focus on genetic status and physiological health. However, natural selection concerns evolutionary processes related to survival, while sexual selection emphasizes competition and selection preferences during courtship and reproduction—that is, intrasexual competition and mate selection. Although

their emphases differ, both are based on evolutionary orientations toward survival and reproduction. Natural and sexual selection are not mutually exclusive but complementary, providing detailed explanations for how physiognomy influences cognition and behavior through the principle of "survival of the fittest." Figure 2 [Figure 2: see original paper] illustrates the physiognomy-based judgment process from an evolutionary cognitive perspective.

Table 1 summarizes relevant theories in physiognomy research, providing theoretical support for explaining the underlying mechanisms of physiognomy-based judgment.

Effects of Physiognomy

Reviewing existing literature, this study categorizes local physiognomic features into three aspects: size and shape of the five sense organs and hair density, while holistic features include fWHR and facial attractiveness. These features provide crucial cues for information processing, association, and inference in physiognomy-based judgment (Paulus & Wentura, 2018; Samizadeh, 2020; Tracy et al., 2020). Overall, physiognomy's effects primarily involve recognition, judgment, and decision-making domains (Bjornsdottir & Rule, 2017; Jaeger et al., 2019). The following sections examine these effects from general cognitive and evolutionary cognitive perspectives.

General Cognitive Perspective Effects

Recognizing Individual Traits First, when recognizing individual traits from physiognomy, the size of sense organs plays an important role. Eyes are windows to the soul, conveying complex information (Lee & Anderson, 2017). Bright, large eyes often represent positive characteristics. Research shows that when people encounter individuals with large eyes, stereotypes are automatically activated. Observers associate large-eyed people with compassion, friendliness, extroversion, conscientiousness, and intelligence, making them more likely to gain others' trust (Waddell & Williamon, 2017; Wolffhechel et al., 2014). Additionally, Hess (1975) found that observers perceive women with large pupils as more beautiful and attractive.

Regarding mouth width, human mouth width correlates positively with the distance between lower canine teeth. In other words, men with larger canines have greater inter-canine distances and wider mouths (Stephan & Henneberg, 2003). In primitive societies, leadership was often determined by physical force (Murray & Schmitz, 2011), and canine size in mammals correlates with male combat ability, dominance, and proactivity (Plavcan & van Schaik, 1992). Therefore, when individuals receive signals of wide mouths, stereotypes of dominance and proactivity are directly activated.

Second, in Western criminology, the shape of sense organs has been widely applied in criminal investigation. For example, rapists often have large ears

and eagle-like noses, considered important criminological genetic characteristics (Lombroso, 2006). Additionally, through social information processing, observers comparing criminals' physiognomies found that thieves typically have compact eyebrows (Oosterhof & Todorov, 2008). Regarding eyebrows, researchers have identified relationships between eyebrow shape and narcissism (Giacomin & Rule, 2019), validating that narcissists are more likely to have distinctive eyebrow shapes. Based on information that grandiose narcissists seek recognition and admiration during interpersonal interactions, observers infer that narcissists enhance their distinctiveness by making eyebrows more prominent. Consequently, individuals with highly arched, angular eyebrows are more readily identified as narcissistic compared to those with thin or neatly groomed eyebrows (Duke et al., 2014).

Finally, holistic physiognomic features play important roles in trait recognition. On one hand, research shows that leaders with high fWHR exhibit higher dominance and aggression (Antonakis & Eubanks, 2017), which observers interpret as confidence. On the other hand, facial attractiveness significantly contributes to recognizing friendliness, trustworthiness, and confidence (Wang et al., 2018). In daily life, facially attractive individuals are often perceived as more friendly and trustworthy, receiving more praise that helps them develop cheerful, positive personalities.

Judging Income, Ability, and Social Hierarchy After recognizing traits through physiognomy, observers make judgments about targets by integrating generated cognitions. For instance, when observers process wide mouth signals, they associate them with dominance and leadership, generating halo effects that lead to judgments of high leadership ability. Conversely, when individuals have narrow mouths, observers associate this feature with "baby faces," concluding low dominance (Little et al., 2007). Re and Rule (2016) sampled CEOs from the top 25 Fortune 500 companies in 2005, matching CEO mouth width with corporate profits, confirming that male mouth width correlates with perceived and actual leadership performance. Additionally, observers extend the dominance and confidence exhibited by high-fWHR leaders to leadership ability evaluations, providing positive assessments that further activate leaders' proactivity and enhance job performance (Alrajih & Ward, 2014). For example, Wong et al. (2011) studied CEOs from multiple renowned global companies, controlling for age, company size, and past economic performance, finding that higher CEO fWHR predicted better corporate performance. Furthermore, Stoker et al. (2016) validated that fWHR values were higher among CEOs of listed companies and influential NGO leaders than among self-employed individuals, partially demonstrating fWHR' s relationship with leadership ability.

The "beauty premium" genuinely exists in workplaces. Beller et al. (1994) surveyed U.S. labor income, finding that facially attractive individuals typically earn higher incomes. According to halo effect theory, observers spread physiognomic perceptions to holistic judgments. Thus, when receiving information

about high facial attractiveness, positive perceptions diffuse to other domains. Facially attractive individuals are generally perceived as more capable and professional, making them more likely to stand out and earn higher incomes than less attractive counterparts.

The nose is considered a symbol of career and wealth (Samizadeh, 2020). According to status generalization theory, when targets have large noses, observers output dominance characteristics, then amplify these perceptions to infer higher social status and power (Windhager et al., 2011). High-status, powerful individuals control more resources and possess advantages in resource allocation, leading observers to believe such targets are more likely to achieve career success and wealth. Additionally, baldness generally creates perceptions of older age, symbolizing seniority, making bald men more readily judged as having high social status (Muscarella & Cunningham, 1996).

Trust Decisions Individuals make judgments based on recognized information, ultimately affecting decisions. In trust decisions, eye size helps observers recognize positive traits like friendliness, intelligence, and conscientiousness, which activate positive impressions and become important observational indicators for trust decisions (Kang & Wheatley, 2017; Proulx et al., 2017). In trust games, decision-makers provide more investment and reciprocity to individuals with large pupils based on feedback information, then infer that large-pupiled individuals are more trustworthy, giving them advantages in trust decisions (Kret & De Dreu, 2019).

Additionally, Re and Rule (2016) found that candidate mouth width correlates with election outcomes, with wide-mouthed leaders having advantages in U.S. Senate campaigns. Voters develop trust based on leadership ability reflected by mouth width, influencing final election results.

Recruitment and Promotion Decisions In workplace settings, facially attractive individuals are perceived as possessing more positive qualities—such as positivity, confidence, competitiveness, and professionalism—compared to less attractive individuals. Furthermore, the good temperament displayed by attractive individuals attracts attention and popularity, boosting their confidence. These positive traits enable attractive individuals to gain more social opportunities with relatively lower social costs, indirectly enhancing their communication and negotiation abilities (Faust et al., 2018). Consequently, facially attractive individuals have advantages in job interviews and are more likely to stand out and obtain promotion opportunities (Deng & Gao, 2019; Guo et al., 2017; Scholz & Sicinski, 2015). Lee et al. (2015) also validated the positive effect of facial attractiveness, finding that when decision-makers want to cooperate with candidates, they view attractive individuals as capable collaborators and make hiring or promotion decisions. Decision-makers hope that selecting advantaged partners in competitive environments will reduce their own elimination probability and enhance competitiveness.

However, facial attractiveness does not always produce positive effects. When decision-makers compete with candidates, they tend to view attractive individuals as capable competitors (Agthe et al., 2010). Because facial attractiveness is generalized as a form of ability, decision-makers believe attractive candidates threaten their own status and interests. To maintain advantages in resources and status, decision-makers may adopt suppressive, discriminatory attitudes, or even engage in antisocial behaviors like violence and threats to undermine others' resources, placing attractive individuals at a disadvantage in recruitment and promotion decisions.

Evolutionary Cognitive Perspective Effects

Recognizing Individual Health and Genetic Status When recognizing health status, hair density and facial attractiveness serve as important physiognomic cues. Hair density is one manifestation of individual health and good reproductive genes. Compared to dense-haired individuals, sparse-haired individuals are more likely to be associated with disease (Pechlivanis et al., 2019). Fink et al. (2016) used simulation methods to manipulate hair density, validating its influence on perceptions of intelligence, age, health, and attractiveness. From an evolutionary perspective, dense-haired individuals are considered physically robust—a symbol of strength preserved through natural selection. Observers match this cognition with vigorous youth, perceiving such targets as younger, thereby affecting health status recognition.

From an evolutionary cognitive perspective, individual physiological differences primarily manifest in genetic quality, health level, and reproductive capacity. Facial attractiveness is an important cue for assessing these differences. Good genes theory explains that an attractive face indicates better genetic status and physiological health—essential factors for reproduction. Individuals perceived as facially attractive reflect reproductive advantages. Henderson and Anglin (2003) showed that facially attractive individuals are perceived as healthier, longer-lived, and more likely to survive competitive environments. Additionally, Jokela (2009) conducted longitudinal research on facial attractiveness and fertility, finding that attractive individuals had higher health levels and more offspring compared to less attractive individuals.

Judging Marital Satisfaction, Life Satisfaction, and Happiness Facial attractiveness typically correlates with marital satisfaction, life satisfaction, and happiness (Calvo et al., 2018; Palumbo et al., 2017). On one hand, considering evolutionary pressures, individuals actively pursue partners with good genes, preferring facially attractive mates (Bjornsdottir & Rule, 2017; Ji-Eun et al., 2018). On the other hand, evolutionary intrasexual competition theory suggests that individuals compete with same-sex others when selecting quality mates to satisfy evolutionary needs. This competition means quality partners attract multiple same-sex competitors. Since mate selection is a bilateral process, preferences for attractive partners enhance the bargaining power of attractive

individuals, giving them more choices and greater likelihood of finding satisfactory spouses. Consequently, attractive individuals experience higher marital satisfaction than less attractive individuals (Yin & Liu, 2019). Higher marital satisfaction leads to more positive family life evaluations, easier acquisition of spiritual pleasure, and enhanced life satisfaction that translates into happiness (Huang & Tian, 2019).

Mate Selection Decisions In mate selection, based on good genes theory from sexual selection, individuals desire healthy genes to enhance reproductive capacity and maintain competitive advantages. Dense-haired individuals are considered to possess good genes for reproduction. During sexual selection, to adapt to survival-of-the-fittest principles, individuals prioritize healthy, intelligent mates to provide healthy genes for offspring (McArthur & Baron, 1983). Therefore, sparse-haired individuals are disadvantaged in mate selection. However, some researchers argue that "with baldness comes strength," suggesting bald men may have advantages in mate selection. This is because excessive male androgen secretion causes baldness but promotes right hemisphere development and intelligence, which is also a manifestation of good genes, giving bald men advantages in mate selection (Muscarella & Cunningham, 1996).

In evolution, genes are the driving force, and physiognomy is the carrier reflecting genetic status. This genetic drive prompts people to explore which features relate to health, survival, and evolutionary needs. Good genes theory states that facially attractive individuals possess healthy genes, good immunity, and reproductive advantages, while less attractive individuals imply unhealthiness and reproductive risks. To satisfy reproduction and evolutionary needs, individuals select facially attractive mates, combining with them to pass advantageous genes to offspring and enhance genetic advantages in future generations (Bjornsdottir & Rule, 2017; Ji-Eun et al., 2018).

In summary, physiognomy' s effects concentrate on recognition, judgment, and decision-making. The general cognitive perspective emphasizes perceptual processes where responses to physiognomy represent byproducts of brain information processing (Rhodes, 2006), dealing with general information mechanisms. Scholars have used stereotypes, halo effect, status generalization theory, and social information processing theory to explain physiognomy-based judgment processes and effects through different cognitive processing systems. This review finds that local features (organ size/shape, hair density) and holistic features (fWHR, facial attractiveness) influence trait recognition (compassion, friendliness, extroversion, confidence, narcissism, aggression, dominance, criminological genetics) through different cognitive systems. Recognized traits subsequently affect judgments of income, ability, and social hierarchy, as well as trust, recruitment, and promotion decisions.

The evolutionary cognitive perspective emphasizes genes as the driving force in social information processing, with individuals identifying cues related to health, survival, reproduction, and environmental adaptation based on evolu-

tionary needs. This represents a specialized information processing mechanism for gene- and reproduction-related information. Scholars have used evolutionary theory, intrasexual competition theory, and good genes theory to explain physiognomy-based judgment processes and effects through natural and sexual selection mechanisms. Observers use genes as the driving force to recognize physiognomy, assess health and genetic status, judge marital satisfaction, life satisfaction, and happiness, and select mates based on "survival of the fittest" principles.

Although existing research primarily uses these two perspectives to explain physiognomy' s effects on recognition, judgment, and decision-making, their different emphases produce distinct mechanisms and outcomes. Employing both perspectives helps scholars develop systematic research frameworks and provides reasonable theoretical structures for psychological explanations of physiognomy-based judgment.

Moderating Factors in Physiognomy-Based Judgment

The saying "beauty is in the eye of the beholder" suggests certain factors may influence physiognomy effects. Inconsistent findings in physiognomy research have prompted scholars to examine boundary conditions, with potential moderators including situational factors and individual trait factors. The following sections summarize these from perspectives of both face observers and face owners.

Situational Factors in Physiognomy-Based Judgment

Social information processing theory indicates that attitudes and behaviors based on physiognomy are substantially influenced by surrounding social environments. Individuals screen and process input facial features to form cognitions that ultimately affect behavioral feedback. During cognition formation and behavior generation, environmental context constitutes an important source of variation in physiognomy effects. In different decision contexts, face observers weigh benefits and risks by integrating physiognomy with reality, ultimately making judgments and decisions. Additionally, because face owners have different cultural backgrounds, physiognomy' s effects vary accordingly.

Face Observer' s Decision Context In war versus peace contexts, preferences for leaders with dense versus sparse hair differ. Blaker et al. (2020) demonstrated that to increase war victory probability, people desire leaders with high-level command abilities. From an evolutionary perspective, hair density results from natural selection, with dense-haired individuals being more attractive and representing better health and intelligence—qualities related to leadership combat effectiveness. Therefore, in wartime contexts, people show stronger preferences for dense-haired leaders compared to bald leaders. In peacetime contexts, no significant preference difference emerges between dense-haired and bald leaders, possibly because hair plays a less significant role than other

physiognomic cues in leader selection.

In socially turbulent versus stable contexts, "baby faces" receive different levels of voter affection, affecting their competitive advantages. In turbulent regions, baby-faced candidates receive more votes and have competitive advantages over mature-faced candidates because people attribute childlike qualities—innocence and kindness—to baby-faced leaders, inferring they are more likely to propose peaceful initiatives and bring peace possibilities, thus gaining voter affection (Maoz & Ifat, 2012). In stable contexts, voters prefer mature, dominant, and capable candidates. Since baby-faced candidates appear less competitive and dominant than mature-faced candidates, baby faces are perceived as representing electoral failure. Therefore, baby-faced candidates receive fewer votes and are disadvantaged in campaigns (Tal-Or et al., 2019).

Furthermore, fWHR effects are moderated by decision context. For instance, Yu et al. (2019) examined how advisors' fWHR influences advice-taking, validating that decision context moderates this relationship. In low-affective-difficulty contexts, advice from high-fWHR individuals is less readily accepted; in high-affective-difficulty contexts, fWHR' s predictive effect on advice-taking is weakened. On one hand, as social information, physiognomy processing from signal reception to completion occurs briefly and automatically, reflecting unconscious processes (Zhang & Zhu, 2012). Therefore, in high-difficulty contexts, decision-makers may overlook "intuitive"cues like fWHR due to time constraints, weakening its effect. On the other hand, in high-affective-difficulty contexts where decision consequences are important and perceived threat is high, decision-makers behave more cautiously, emphasizing "rational" decisions that reduce fWHR' s predictive power. In low-affective-difficulty contexts with lower perceived threat, decision-makers focus on rapid decisions and thus reference fWHR information when deciding whether to accept advice.

Face Owner' s Cultural Context Although cross-cultural physiognomy research remains limited, existing evidence suggests cultural background may be an important moderator. For example, Beller et al. (1994) surveyed U.S. labor income, confirming the existence of a "beauty premium" whereby higher facial attractiveness predicts higher income—attractive individuals earn more than average-attractiveness individuals, who in turn earn more than unattractive individuals. However, Guo et al. (2017), using Chinese household tracking survey data, found a "high-heeled curve" relationship between facial attractiveness and income in China. Specifically, highly attractive individuals earn more than unattractive individuals but less than moderately attractive individuals, indicating that facial attractiveness effects on income differ across countries.

Additionally, Nascimento and Little (2019) demonstrated that cultural differences such as collectivism versus individualism are important factors producing different physiognomy effects. Comparing partner retention strategies between Brazil and the UK, they found that in male samples, collectivism-individualism culture moderated the relationship between partner facial attractiveness dispar-

ity and negative retention strategies. Compared to Brazilian men, when UK men had large facial attractiveness differences with partners, they were more likely to employ negative retention strategies like derogation and threats. This occurs because UK culture emphasizes individual development, while Brazilian collectivist culture makes individuals prioritize family relationships. Thus, Brazilian men are less likely to adopt negative partner retention strategies and more likely to protect positive relationships. This shows that across cultures, facial attractiveness disparity differentially affects partner interaction styles.

Individual Trait Factors in Physiognomy-Based Judgment

During cognition formation, different individual traits easily create personal preferences that affect cognitive outcomes. When individuals recognize and judge based on physiognomy, different traits produce divergent inferential results. Factors such as cognitive ability, attitudes, gender, education level, and socioeconomic status all interfere with physiognomy effects.

Face Observer' s Individual Traits Emotional intelligence is significant for decision tasks involving emotional difficulty. Decision-makers using physiognomy are influenced by emotional intelligence levels. In emotionally difficult decision tasks, individuals with high emotional intelligence better utilize physiognomic cues to make more accurate and reliable decisions. High emotional intelligence individuals are more skilled at using facial trustworthiness to detect deception faster. Alkozei et al. (2016) had 62 participants perform airport security screening tasks during simulated terrorist threats, observing passenger photos to make detention decisions. They found that high emotional intelligence individuals could match limited resources (physiognomy) with observers' aggressive (negative) and trustworthy (positive) traits, making more accurate suspect judgments in emotionally difficult contexts. Low emotional intelligence individuals made less accurate judgments based on physiognomic information.

Physiognomy-based judgment outcomes are also influenced by observers' cognitive biases. Korva et al. (2013) demonstrated that judicial decision-makers' attitudes moderate physiognomy effects. In simulated court trials, when judicial officers held positive attitudes toward judicial fairness, low facial trustworthiness defendants were more likely to be acquitted. Because these officers believed decisions based solely on facial trustworthiness easily produced biases, they were more lenient toward low-trustworthiness defendants, delivering positive verdicts. Conversely, officers with negative judicial fairness attitudes were more likely to convict low-trustworthiness defendants, relying more on physiognomy and showing less tolerance, resulting in harsher judgments.

Face Owner' s Individual Traits The "beauty premium" effect varies by gender and education level. Domestic scholars using Chinese household tracking data validated positive correlations between physiognomy and both happiness and marital satisfaction (Huang & Tian, 2019; Yin & Liu, 2019). However,

effects differ by gender. Physiognomy affects men' s happiness and marital satisfaction more significantly than women' s. When men are facially attractive, they have workplace advantages that help them fulfill breadwinning responsibilities, aligning with traditional "male provider, female homemaker"divisions. This allows men to realize their value and responsibilities through "outside" work, enhancing happiness and marital satisfaction. Additionally, physiognomy effects are moderated by education level. Higher education suppresses physiognomy' s positive effect on marital satisfaction, possibly because educated individuals have higher mate selection standards, reducing the likelihood of finding perfectly matched spouses and consequently decreasing marital satisfaction.

Male fWHR typically correlates with antisocial behaviors like aggression and fraud, but socioeconomic status moderates this relationship (Haselhuhn & Wong, 2012). The correlation only holds among low socioeconomic status males; no correlation exists among high-status males. High socioeconomic status individuals avoid such behaviors due to higher potential costs. Thus, the fWHR-aggression/fraud mechanism only manifests in low socioeconomic status male groups.

Based on existing research synthesis (Figure 3 [Figure 3: see original paper]), physiognomy' s effects primarily involve recognition, judgment, and decision-making from both general cognitive and evolutionary cognitive perspectives. Face observers' individual traits and decision contexts, along with face owners' individual traits and cultural backgrounds, play irreplaceable roles in physiognomy-based judgment processes.

Although substantial physiognomy research exists, no complete research system has formed. This paper systematically reviews existing research from general cognitive and evolutionary cognitive perspectives, examining local and holistic physiognomic features' effects on recognition, judgment, and decision-making. Specifically, local features (organ size/shape, hair density) and holistic features (fWHR, facial attractiveness) affect individual recognition, judgment, and decision-making, with effects moderated by situational and individual trait factors. However, several issues remain: most research focuses on single physiognomic features; contradictory conclusions persist; sample sources and sizes are criticized; scientific basis and internal logic are disputed; research primarily examines natural physiognomy while neglecting modified features; and empirical studies predominantly occur in Western contexts with limited Chinese indigenous research. To address these issues and enrich physiognomy research, future Chinese studies should consider the following directions.

Examining Interactions Among Different Physiognomic Features

Current physiognomy research primarily focuses on single features (Giacomin & Rule, 2019; Hahn et al., 2017), using strict experimental designs to validate individual effects. Although effects are experimentally confirmed, real-world application and generalizability remain limited because physiognomy comprises

multiple dimensions that may interfere with each other. In actual social interactions, individuals cannot easily separate physiognomic components, creating interactive effects and increased interference. While Re (2016) confirmed that mouth width predicts leadership ability, in reality, people do not rely solely on mouth width—other organ features and holistic perceptions may be important factors. For example, in trust games, besides eye features, eyebrow density and nose shape (e.g., hooked nose) may constitute comprehensive trust indicators. Future research should consider interactions among more physiognomic features, focusing on comprehensive indicators rather than single features to improve physiognomy-based judgment validity.

Exploring Boundary Conditions of Physiognomy Effects

Contradictory conclusions may result from unexamined boundary conditions. Although literature shows physiognomy predicts cognition and behavior, small-sample significant results may suffer from publication bias, where significant findings are more likely to be published, questioning physiognomy' s authenticity. Additionally, despite theoretical explanations, contradictory conclusions remain, challenging scientific validity. For example, Muscarella et al. (1996) suggested bald men are more intelligent, while Fink et al. (2016) found dense-haired individuals have higher IQ. Future research should therefore focus on boundary conditions. Potential moderators include gender, race, height, clothing, facial expressions, and environmental factors like decision context and cultural background. For instance, evolutionary psychology suggests men prioritize health while women prioritize resources in mate selection (Lu et al., 2015). Gender differences in partner selection standards affect physiognomy-based cognitions and behaviors. Exploring boundary conditions will better explain underlying psychological mechanisms.

Enhancing External Validity Through Big Data Analytics

Existing literature primarily uses laboratory studies and limited secondary data, yielding low external validity. Most studies involve small, non-representative samples, reducing scholarly acceptance of findings. Big data offers new directions for physiognomy research (Tang, 2021). Rapid social platform development has diversified public interaction, allowing personality inference from online posting texts even among strangers (Tskhay & Rule, 2014). Future research could use automated big data collection for large-scale sampling, deeply mining physiognomy mechanisms. For example, analyzing photos and posts from social media platforms like Weibo and WeChat through portrait and text recognition could provide multi-channel, large-scale data support. However, while emphasizing external validity, causal verification must also be maintained. Future studies should employ more rigorous designs and multi-source data to explore internal mechanisms.

Examining Effects of Modified Physiognomy

Physiognomy significantly affects ability, interpersonal relationships, and careers (Gutiérrez-García et al., 2019; Stoker et al., 2016), triggering "appearance anxiety." Importantly, physiognomy is not static; to meet aesthetic demands, people modify features through makeup and cosmetic surgery—an unavoidable aspect of physiognomy research. Currently, scholars pay limited attention to modified physiognomy and its effects. Future research should examine how modified physiognomy affects observers' recognition, judgment, and decision-making, comparing effects between natural and modified features to deepen physiognomy understanding. From face owners' perspective, research could investigate whether modified physiognomy genuinely enhances attractiveness or affects personality and behavior—such as whether personality and social interaction patterns change after cosmetic surgery. Additionally, considering contextual factors, future studies could examine how makeup-modified physiognomy affects cognition and behavior in negotiation, interview, and social contexts.

Conducting Indigenous Physiognomy Research

Reviewing existing literature reveals most studies occur in Western contexts, with limited empirical physiognomy research in Chinese cultural settings (Lin et al., 2018; Wang et al., 2018). Chinese culture possesses unique characteristics that may invalidate Western-confirmed conclusions in Chinese contexts. First, the same physiognomy may produce different effects across cultures. For example, Westerners prefer "phoenix eyes" and "slender eyebrows," while these are not considered beautiful symbols in Chinese culture. Second, cultural differences affect the importance attached to different facial parts. Even when observing the same face, individuals from different cultures may focus on different features during information processing. Argyle et al. (1986) showed Westerners focus more on eyes during interaction, while Kelly et al. (2011) found Easterners focus more on noses. These factors affect the applicability of existing conclusions in Chinese contexts. Therefore, future research should examine physiognomy effects in Chinese contexts, exploring indigenous uniqueness. Additionally, cross-cultural studies comparing Chinese and Western physiognomy-based judgment could investigate internal mechanisms incorporating cultural factors, providing value for understanding cross-cultural physiognomy effects.

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Note: Figure translations are in progress. See original paper for figures.