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Expectations of Men's Use of Harsh Parental Discipline Through Formidability Inferences

Mitch Brown¹, Donald F. Sacco², Steele Donahoe³, Samuel E. Snowden¹,
Hannah L. Masoner², Megan N. McPherson⁴, and Lindsey E. Eagan¹

¹ Department of Psychological Science, University of Arkansas

² School of Psychology, The University of Southern Mississippi

³ Department of Social and Behavioral Sciences, John Brown University

⁴ Department of Counseling, Southern Methodist University

One modality to estimate men's formidability and aggressive proclivities is their facial width-to-height ratio (fWHR). Such inferences may further influence perceptions of men as fathers, particularly their preferred disciplinary strategies. Four studies investigated expectations of parental disciplinary strategies as a function of fWHR. Participants viewed high-fWHR men as more likely to punish offspring (Study 1), and this expectation was especially rooted in perceptions of their proclivity toward anger (Study 2). These inferences were also specific to physical discipline (Study 3). A downstream perception further emerged of high-fWHR men as being more prone to child abuse (Study 4). Findings indicate how formidability inferences inform modern-day expectations of familial dynamics, highlighting an evolutionary mismatch.

Public Significance Statement

Perceivers use men's facial structures to estimate their behavioral intentions, particularly features diagnostic of their formidability. From these formidability inferences, people could estimate how men engage in parental behaviors, namely how they would likely discipline their children. In four experiments, participants indicated the likelihood that men would punish their children while similarly determining the basis of these inferences and what type of punishment would likely occur for formidable men. Formidable men were stereotyped as being more prone to punishing their children, a perception largely rooted in perceptions of their proclivity toward anger and specific to harsh punishments. These inferences also led perceivers to view formidable men as prone to child abuse. We discuss how modern conventions of parenting are informed by evolutionary motives and how this stereotyping can interfere with fair treatment of men.

Keywords: formidability, parenting, punishment, stereotyping, facial width-to-height ratio

Mate selection relies partially on the identification of mates capable of investing in offspring to facilitate their survival. This identification presents a signal detection problem to perceivers. Perceivers must quickly estimate others' intentions

with limited information in a manner that minimizes costs (Haselton & Buss, 2000). Selection would have favored those capable of inferring parental intentions heuristically through physical features connoting parental ability (Bjorklund & Myers, 2019; Brown, Sacco, Boykin, et al., 2021). Morphological features provide the basis of many heuristics for a social target's intentions to perceivers from which they begin to estimate the intentions and social value of the target in various domains (Lassetter et al., 2021; Neuberger et al., 2020; Sng et al., 2020; Zebrowitz & Montepare, 2006). Perceivers could rely on these

Mitch Brown  <https://orcid.org/0000-0001-6615-6081>

Correspondence concerning this article should be addressed to Mitch Brown, Department of Psychological Science, University of Arkansas, Memorial Hall 216, Fayetteville, AR 72701, United States. Email: mb103@uark.edu

features to recognize the parental value of a prospective parent. These inferences could reflect awareness of men who could optimize parental care during the prolonged vulnerability of human offspring in childhood that has historically required biparental investment.

A highly salient component of men's social capital is their formidability, or their relative advantages in physical conflict. In addition to more traditionally conceptualized aspects of this social value in general protection (e.g., Lukaszewski et al., 2016), formidability appears to have a concomitant signal value toward perceivers in parenting domains (Brown, Sacco, Boykin, et al., 2021). Formidable men are perceived as both protective fathers and punitive (Boykin et al., 2023; Brown & Tracy, 2024; Brown, Donahoe, & Boykin, 2022; Sacco et al., 2020). Although such men could afford protection to their families and are physically attractive to women, this desirability covaries with aggression (Geniole & McCormick, 2013; Haselhuhn et al., 2013). These conflicting inferences could manifest as the relative ambivalence toward fatherhood across various ecologies and the prevalence of divorce worldwide, wherein fathers may not always increase the likelihood of offspring survival or even reduce it (see Daly & Wilson, 1988; Sear & Mace, 2008; United Nations, 2021). Perceptions of men as aggressive could lead to downstream inferences that implicate formidable men as harsh disciplinarians and thus undermining their benefit to offspring survival. When identifying prospective fathers and the potential benefits of mates (e.g., good genes, protection, and access to resources), women would thus benefit from considering these tradeoffs of formidability, given the high likelihood of parent-offspring conflict to occur that would require parents to be mindful of optimizing their inclusive fitness (Salmon & Malcolm, 2011).

This conflict creates competing selection pressures with those imposed by a desire for protection. Perceivers must be implicitly aware of the possibility that a protector could similarly be a bully (e.g., Borrás-Guevara et al., 2017; Solomon & Lyons, 2020). Despite the protective benefits, heightened levels of testosterone in men reduce their interest in parental care (Gray & Campbell, 2009). Estimates of men's proclivity toward aggression occur through morphology ostensibly diagnostic of heightened androgenic activity. One aspect of men's facial morphology from which perceivers estimate

men's proclivity toward aggressive parenting could be facial width-to-height ratio (fWHR). Perceivers regard men with a higher fWHR as having more aggressive intentions in addition to their benefits in protecting group members (Brown, Brown, & O'Neil, 2022; Carré et al., 2009; Dixson et al., 2017; Durkee & Ayers, 2021; Geniole & McCormick, 2015; Haselhuhn et al., 2015). This research considered how formidability informs perceptions of men's likelihood to employ harsh parenting strategies.

Inferences of Paternal Ability Through Formidability

Extensive parental care is critical for juvenile humans, as this care was historically essential to ensure offspring's survival into adulthood. Despite previous research suggesting that the father's importance in the survival of offspring may be limited to specific domains (e.g., Sear & Mace, 2008), paternal care of offspring nonetheless remains extraordinarily high relative to other primates (Gettler et al., 2020). This extensive care could further be specific to ecologies with less access to alloparenting opportunities that would require cooperation between mates, such that perceivers could be aware of these costs and benefits for when they are in environments that would favor paternal investment (Geary, 2000). Women's evaluations of men in long-term relationships often center around expectations of paternal abilities and resource acquisition to offset their larger reproductive costs (e.g., Alonso & Ortiz-Rodríguez, 2017; Conroy-Beam et al., 2015). Their evaluations could have a kernel of truth toward men's actual abilities, partly due to the advantages in physical conflict and increased social capital that formidable men enjoy, in addition to men's interest in investment predicting offspring survival (Kelly & Alonzo, 2009).

Selection would have favored perceivers capable of forming impressions of social targets based on their paternal abilities, particularly in environments that see paternal investment increase the inclusive fitness of offspring. Women prioritize protective men (Kokko et al., 2003). This prioritization would have led to greater importance for men's ability to protect in women's mate selection, leading to a preference for formidable men (Hofer et al., 2018; Sacco et al., 2015; Snyder et al., 2011). The domain-general awareness of protective capabilities could have also led men to

develop implicit theories of other men's parental abilities based on their coalitional value.

Although women prioritize men's ability to protect offspring, such decisions could present costs to the perceiver (see Holzleitner & Perrett, 2017). Protective abilities are often at the expense of an interest in nurturance (Beall & Schaller, 2019). Formidability elicits stereotypes of men as aggressive and promiscuous, which could limit their social desirability to specific contexts and ultimately undermine perceptions of their abilities to provide care for offspring (Brown, Boykin, & Sacco, 2022; Brown, Brown, & O'Neil, 2022; Craig et al., 2019; Geniole & McCormick, 2013). Formidable men appear prone to harsh discipline and perceivers regard them as especially punitive (Brown, Donahoe, & Boykin, 2022; Sacco et al., 2020). Formidability inferences track actual stereotyping of hostility, which can foster aversion from perceivers (Brown, Sacco et al., 2017; Sell et al., 2009). Punitive measures could be advantageous to mitigate intergroup conflict, although such benefits could covary with an awareness of the potential harm from affiliating with formidable group members. Within communities with high rates of domestic violence, women are averse to masculinized features (Borras-Guevara et al., 2017). Conversely, men's perceptions could reflect evaluations of other men as capable of providing coalitional protection as allies (McDonald et al., 2012). Their perceptions within parenting domains could be a downstream inference of this expectation.

Coalitional Value of Formidable Facial Structures

Men's coalitional value covaries with their formidability. The historic difficulty in modifying formidable facial structures implicates them as useful for these estimates and provides fairly veridical cues of men's actual formidability (Caton, Zhao, et al., 2022). Fetal androgen exposure and pubertal testosterone surges modulate this masculinization, which foster muscle growth and facial widening (Griggs et al., 1989; Whitehouse et al., 2015). Upper body strength is further associated with, and accurately perceived in, these masculinized facial structures (Holzleitner & Perrett, 2016; Price et al., 2017). From these inferences, perceivers could identify the extent to which men appear capable of satisfying coalitional goals as allies while similarly

calculating the potential for interpersonal harm from such men in different contexts.

Men's fWHR contributes to formidability inferences through its various components. Though this ratio is itself not sexually dimorphic (Lefevre et al., 2012), several components of fWHR are diagnostic of men's masculinization and inform a broader perception of their coalitional value. Men have wider and longer faces that connote heightened androgenic activity (Hodges-Simeon et al., 2016, 2021). Facial width is indeed sexually selected, with their facial height amplifying the signal value of aggression (Caton & Dixson, 2022; Dixson, 2018; Kajonius & Eldblom, 2020; Liu et al., 2022). This amplified signal value would have thus formed the basis of a heuristic estimate of men's physical prowess and proclivity toward aggression. Male formidability has been socially and sexually selected due to the recurrent threat of physical conflict and intrasexual competition throughout evolutionary history that would favor men capable of winning in physical conflict (Puts, 2010). In modern ecologies, male-mixed martial arts fighters with masculinized features have favorable win-loss records across weight classes (Caton, Hannan, & Dixson, 2022; Caton, Zhao, et al., 2022; Třebický et al., 2015; Zilioli et al., 2015; but see Caton, Pearson, & Dixson, 2022). Archaeological records of male skeletons further indicate that high-fWHR men have historically survived violent encounters more readily (Stirrat et al., 2012).

Even if these inferences are merely estimates of prowess and intentions, selection would have further favored perceptual acuity toward the physical advantages (and potential costs) of high-fWHR men in group living. One heuristic is perceptions of these men as rugged and protective (Brown, Bauer, et al., 2021; Brown, Sacco, et al., 2022; Deska et al., 2022; Hehman et al., 2015). These benefits ultimately correspond with tradeoffs of the potential risks for physical threats from high-fWHR men who appear more exploitative (Durkee & Ayers, 2021; Geniole et al., 2015; Matsumoto & Hwang, 2021). This perception exhibits a kernel of truth cross-culturally (see Christiansen & Winkler, 1992; Haselhuhn et al., 2013). High-fWHR men have more formidable bodies that advantage them in combat (Polo et al., 2019). Unlike other formidability inferences that track parental ability (e.g., upper body strength; Brown, Donahoe, & Boykin, 2022), the immediacy of face-to-face contact throughout

human evolutionary history could provide a complementary route to infer parental behaviors through formidability. These inferences would not only consider physical ability but also intentions in a manner unique to faces.

Current Research

This research extends work on fWHR in shaping inferences of men's coalitional value by considering parenting domains. In four experiments, participants estimated men's proclivity toward aggressive parenting through fWHR. We assessed whether fWHR provides this heuristic information (Study 1) and its perceptual underpinnings in both aggression and strength (Study 2). We then identified domain-specificity by comparing punishment with more constructive strategies (Study 3). Finally, we considered downstream implications of these inferences in expectations of child abuse (Study 4). We report all measures, manipulations, and exclusions in this manuscript and through the online files containing our data. Data, syntax, and materials are available: https://osf.io/q648g/?view_only=ead1255a97174edfb86cffb99430cbe6.

Study 1

Our initial step was to identify how fWHR informs inferences of men's proclivity toward punishing offspring. Previous research indicates that perceivers stereotype formidable men as more punitive and aggressive toward their offspring (Brown, Donahoe, & Boykin, 2022; Sacco et al., 2020). This inference corresponds with one implicating them as prone to aggression (Durkee & Ayers, 2021). We predicted that high-fWHR men would appear as more prone toward punishment relative to low-fWHR men to perceivers.

Method

Participants

We recruited 74 undergraduates from a large public university in Southeastern United States for course credit (39 men, 35 women; $M_{\text{age}} = 19.49$, $SD = 2.14$; 85.1% White). A sensitivity analysis indicated that we were sufficiently powered to detect medium effects (Cohen's $d = 0.42$, $1 - \beta = .80$). Given previous research indicating a lack of sex differences in these heuristics of formidability in men (e.g., Brown, Sacco, et al.,

2022), we did not consider participant sex as a between-subjects factor in these studies.

Materials and Procedures

Participants evaluated 20 individuals in how they would approach disciplining their children. Targets were images of White male faces from the Chicago Faces Database presented in color (Ma et al., 2015; Figure 1). Targets naturally varied in fWHR and were previously selected for possessing the 10 highest and 10 lowest fWHRs that were significantly different from each other (Cohen's $d = 6.32$; Deska & Hugenberg, 2018).

Targets looked straightforward to reduce the possibility of head position altering the appearance of fWHR and thus formidability (Hehman et al., 2013; Makhanova et al., 2017). Faces were neutrally expressive with similar levels of attractiveness ($d = 0.05$). Participants evaluated faces in a randomized and counterbalanced order by indicating the likelihood of each target punishing his children along one 7-point scale (1 = *not at all* to 7 = *very much*).

Results

We compared high-fWHR and low-fWHR targets with a paired-samples t test. High-fWHR targets appeared more likely to punish their children ($M = 4.53$, $SD = 0.95$) than low-fWHR targets ($M = 3.76$, $SD = 0.85$), $t(73) = 11.49$, $p < .001$, $d = 1.33$, 95% CI [1.02, 1.65]. Our next step was to conduct a pair of one-sample t tests to determine whether these inferences were categorical. That is, are men perceived as categorically prone to punishment as a function of their fWHR? We tested our means for high-fWHR and low-fWHR targets against the scale midpoint of four for our measure. High-fWHR men were perceived as categorically prone to punishment, $t(73) = 4.78$, $p < .001$, $d = 0.55$, 95% CI [0.31, 0.75]. Conversely, low-fWHR men were perceived as categorically not prone to punishment, $t(73) = -2.37$, $p = .020$, $d = -0.27$, 95% CI [-0.50, -0.04].

Discussion

This study provided initial evidence for how formidability inferences inform perceptions of men's intentions as parents. Namely, participants viewed high-fWHR men as more likely to punish their offspring. Despite the theoretical sensibility of this

Figure 1

Examples of High-fWHR (Left) and Low-fWHR Stimuli Used in Each Study



Note. fWHR = facial width-to-height ratio. Faces are Adapted from “The Chicago Face Database: A Free Stimulus Set of Faces and Norming Data,” by D. S. Ma, J. Correll, & B. Wittenbrink, 2015, *Behavior Research Methods*, 47(4), p. 1122 (<https://doi.org/10.3758/s13428-014-0532-5>). Copyright 2024 by the Springer Nature.

finding, it remains less clear as to what the basis of this particular inference could be. Formidability is itself a multifaceted construct that is connoted in unique capacities across different male bodily and facial features. On the one hand, this inference could correspond with perceptions of formidable men’s proclivity toward anger (Brown, Bauer, et al., 2021), itself oftentimes a predictor of whether a parent disciplines a child (Leung & Slep, 2006). However, it could be similarly likely that the heuristic of physical prowess is driving this effect more strongly (Brown, Donahoe, & Boykin, 2022). Study 2 sought to replicate these findings by considering the perceptual underpinnings of these inferences by comparing perceptions of anger and strength.

Study 2

The stereotyping of formidable men is oftentimes predicated upon preliminary assessments of physical abilities and emotional states. However, such inferences often vary from specific components that contribute to the assessment of overall formidability. Strength and anger are both salient to perceivers. It could be similarly likely that both inform perceptions of a proclivity toward punishment (Brown, Tracy, & Boykin, 2022; Deska et al., 2018; Durkee & Ayers, 2021). One stereotype could be more informative in shaping these perceptions. For example, when choosing teammates for tasks that require strength, perceptions of high-fWHR men’s strength were more predictive of this preference than perceived anger (Brown, Sacco, et al., 2022).

If the strength of the target is more salient in these judgments, then perceptions of strength would be more predictive of men’s proclivity toward punishment. Conversely, greater salience of anger would lead to anger being the primary predictor. This study tested these competing predictions while also controlling for each other. We additionally assessed perceptions of severity of this punishment, leading us to predict that high-fWHR targets would punish more severely, while also posing competing predictions for strength and anger.

Method

Participants

We recruited 131 undergraduates from a large public university from Southeastern United States for course credit (122 women, nine men; $M_{\text{age}} = 20.73$, $SD = 4.70$; 65.6% White). A sensitivity analysis indicated that we had sufficient power to detect small effects (Cohen’s $d = 0.24$, $1 - \beta = .80$).

Materials and Procedure

In addition to responding to the same punishment likelihood question from Study 1, participants indicated how strong each target body appeared with a single-item manipulation check (1 = *not at all strong* to 7 = *very strong*). We further assessed perceived aggression and how bad of a temper that targets appeared to have with one item each (1 = *not aggressive/not bad at all* to 7 = *very aggressive/bad*). These items were highly correlated in both target categories ($r_s > .87$), suggesting that these items are assessing a highly

similar construct. This high degree of similarity prompted us to aggregate these two items into a single outcome that assesses perceived proclivity toward anger. We additionally assessed perceived punishment severity and how safe participants would feel around targets using single items (1 = *not at all severe/safe* to 7 = *very safe/severe*).

Results

High-fWHR targets continued to be perceived as more likely to punish offspring. They also appeared stronger, angrier, and more likely to punish their children severely to perceivers. Conversely, participants viewed low-fWHR targets as safer. Table 1 provides relevant statistics.

We sought to understand whether the basis of punishment likelihood is more strongly predicted by perceptions of anger or strength. We calculated difference scores for these variables between high-fWHR and low-fWHR targets with higher scores reflecting a higher value for high-fWHR targets for a subsequent correlational analysis (Trafimow, 2015). Both difference scores predicted perceptions of high-fWHR men as more predictive of punishment proclivity among high-fWHR targets, although the association for anger was larger. When controlling for either judgment, correlations remained high. We conducted similar analyses for perceived severity being predicted by strength and anger. Both judgments were associated with perceived severity of punishment. With partial correlations using each other as covariates, only perceived anger predicted severity (Table 2).

Discussion

Although fWHR connotes strength and anger (Brown, Sacco, et al., 2022), anger was most predictive of perceptions that formidable

men were prone to punishing and punishing severely, especially when controlling for perceived strength. Other studies focusing on additional physical features diagnostic of formidability (e.g., upper body strength) found that aggressive tendencies were not predictive of these perceptions (Brown, Donahoe, & Boykin, 2022). This relative heterogeneity in findings could reflect the greater salience of emotion through high-fWHR faces that could inform these inferences of anger more readily instead of what could be a perception of physical prowess seen with other features less tied to emotions (Deska et al., 2018).

Concomitant perceptions of high-fWHR men as less safe further highlight this heterogeneity in results, given that upper body strength connotes an ability to be an effective bodyguard (e.g., Lukaszewski et al., 2016). The expected discipline imposed by high-fWHR men may be qualitatively different than the discipline imposed by men whose formidability is tracked by features that do not connote aggression as readily. This possibility led us to conduct Study 3 to isolate which type of punishments is expected of high-fWHR men. We considered expectations of high-fWHR and low-fWHR men to employ harsh disciplinary strategies (e.g., spanking) or those that employ more gentle tactics (e.g., “talking it out”).

Study 3

The perceptual basis of anger found in Study 2 led us to consider different categories of punishment, namely types that would likely vary in their implementation as a function of anger (Leung & Slep, 2006). First, given heuristics of anger, it would seem likely that such perceptions would track expectations of formidable men to use harsher disciplinary strategies. Conversely, arguably more constructive forms of discipline could be less

Table 1

Descriptive (Means and Standard Deviations) and Inferential Statistics for Assessments of High- and Low-fWHR Targets for Study 2

Outcome	High fWHR	Low fWHR	<i>t</i>	<i>d</i>	95% CI
Punishment	4.50 (0.93)	3.71 (0.93)	10.88*	0.95	[0.64, 0.92]
Strength	4.28 (0.78)	3.11 (0.84)	19.62*	1.71	[1.05, 1.29]
Anger	4.35 (0.93)	3.55 (0.90)	12.33*	1.08	[0.66, 0.92]
Safety	3.09 (0.95)	3.49 (1.00)	-6.02*	-0.52	[-0.53, -0.26]
Severity	4.15 (0.88)	3.46 (0.87)	11.61*	1.01	[0.57, 0.81]

Note. fWHR = facial width-to-height ratio; CI = confidence interval.

* $p < .001$.

Table 2
Affordance Judgment Correlations for Punishment Likelihood and Severity Through Perceived Strength and Anger for Study 2

Outcome	Strength	95% CI _{strength}	Anger	95% CI _{anger}
Punishment	.59**	[0.47, 0.69]	.83**	[0.77, 0.88]
Punishment (partial)	.24*	[0.07, 0.40]	.73**	[0.64, 0.80]
Severity	.50**	[0.36, 0.62]	.82**	[0.75, 0.87]
Severity (partial)	.04	[-0.13, 0.21]	.75**	[0.66, 0.82]

Note. Partial's correlations for the other candidate predictor. Correlations reflect difference scores; higher score indicate a greater perception for high-fWHR targets. CI = confidence interval; fWHR = facial width-to-height ratio.

* $p < .010$. ** $p < .001$.

expected from them, because these expected proclivities toward hostile behavior (Brown, Bauer, et al., 2021; Deska et al., 2018; Haselhuhn et al., 2013). We predicted that high-fWHR targets would be perceived as more prone to harsh discipline and not constructive discipline.

Method

Participants

A sample of 98 undergraduates from a large public university in Southeastern United States completed this study for course credit (68 women, 30 men; $M_{\text{age}} = 19.14$, $SD = 2.18$; 73.5% White). A sensitivity analysis indicated that we had adequate power for small effects (Cohen's $f = 0.14$, $1 - \beta = .80$).

Materials and Procedures

Participants evaluated the targets from previous studies. In this study, they considered the extent to which targets would use harsh or gentle tactics in disciplining their children along 7-point scales (1 = *not at all* to 7 = *very much*) with three items for each category. Harsh items assessed the degree to which targets would spank, scold, or forcefully grab their children. Gentle discipline items assessed the degree that targets would "talk it out," communicate calmly, and use gentle tactics. Items had acceptable reliabilities, which prompted aggregation into subscales in an omnibus analysis ($\alpha_s > .89$).

Results

We submitted our data to a 2 (target fWHR: high vs. low) \times 2 (disciplinary tactic: harsh vs. gentle) repeated-measures analysis of variance. A target fWHR main effect indicated high-fWHR targets

were perceived as more likely to discipline ($M = 4.05$, $SD = 0.78$) than low-fWHR targets ($M = 3.88$, $SD = 0.74$), $F(1, 97) = 42.14$, $p < .001$, $\eta_p^2 = .303$. A disciplinary tactic main effect indicated targets were perceived as more likely to use harsh tactics ($M = 4.33$, $SD = 0.80$) than gentle tactics ($M = 3.60$, $SD = 0.71$), $F(1, 97) = 43.20$, $p < .001$, $\eta_p^2 = .308$.

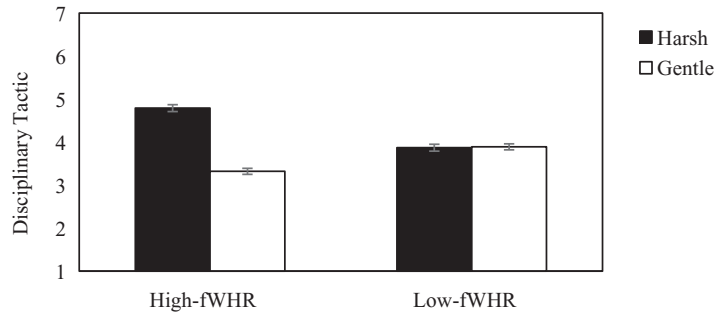
A Target fWHR \times Disciplinary Tactic interaction emerged, $F(1, 97) = 110.70$, $p < .001$, $\eta_p^2 = .533$ (Figure 2). High-fWHR targets appeared more prone to harsh discipline to participants ($M = 4.79$, $SD = 0.84$) than low-fWHR targets ($M = 3.87$, $SD = 0.78$), $F(1, 97) = 136.40$, $p < .001$, $\eta_p^2 = .584$, 95% CI [0.76, 1.07]. Low-fWHR targets appeared prone to use gentle discipline to participants ($M = 3.89$, $SD = 0.71$) than high-fWHR targets ($M = 3.32$, $SD = 0.72$), $F(1, 97) = 62.83$, $p < .001$, $\eta_p^2 = .393$, 95% CI [-0.72, -0.43].

We conducted four additional one-sample t tests to determine whether these perceptions of men's proclivity toward either disciplinary strategy were categorical. Among high-fWHR men, perceivers regarded them as categorically prone to using harsh tactics, $t(97) = 9.35$, $p < .001$, $d = 0.94$, 95% CI [0.62, 0.96]. Conversely, low-fWHR men were perceived as categorically prone to gentle tactics, $t(97) = 9.33$, $p < .001$, $d = -0.94$, 95% CI [-0.82, -0.53]. The high-fWHR targets were not perceived as categorically prone to gentle tactics, nor were low-fWHR targets perceived as categorically prone to harsh tactics ($ps > .119$, $|d| < 0.16$).

Discussion

Results from Study 3 clarify the previously established effects by demonstrating that high-fWHR

Figure 2
Perceived Likelihood of High- and Low-fWHR Targets Utilizing Harsh or Gentle Disciplinary Tactics (With Standard Error Bars) in Study 3



Note. fWHR = facial width-to-height ratio.

men's perceived proclivity toward punishment was specific toward harsh disciplinary strategies. These findings align with previous work indicating that other masculinized features (e.g., high muscularity) connote a similar proclivity toward harsh parenting (Sacco et al., 2020). Taken together, these findings correspond with research implicating greater androgen activity as predictive of greater risk for physical harm (Saxbe et al., 2017). It could be possible that implicit theories of masculinized men's aggression maps onto parental domains based on awareness of how they approach parental care.

Although such stereotyping of formidable men would have been historically functional in developing heuristics for men, such heuristics may inform related modern-day perceptions. Such modern-day perceptions could include those with potential legal consequences. One consequence could be the development of implicit theories of men's proclivity to commit child abuse, with formidable inferences fostering these downstream inferences.

Study 4

Despite these inferences' ancestral function to estimate men's social affordances as parents (Sell et al., 2009), modern social concepts could map onto these inferences and lead to stereotypes of formidable men's proclivity toward harming children even if there is no evidence to support that assumption from perceivers (see Daly & Wilson, 1988; Sacco et al., 2020). We predicted high-fWHR men would be perceived as more prone to child abuse.

Method

Participants

We recruited 91 undergraduates from two large public universities in Southeastern United States for course credit (77 women, 13 men, one identifying as neither; $M_{\text{age}} = 20.76$, $SD = 4.86$; 66% White). We had adequate power for small effects (Cohen's $d = 0.30$, $1 - \beta = .80$).

Materials and Procedure

This study's methods mirrored the previous studies in terms of evaluating the same high-fWHR and low-fWHR targets. However, participants evaluated targets with one item assessing their proclivity toward child abuse (1 = *not at all* to 7 = *very much*).

Results

High-fWHR targets appeared more prone to child abuse ($M = 4.15$, $SD = 1.05$) than low-fWHR targets ($M = 3.50$, $SD = 0.93$), $t(90) = 8.83$, $p < .001$, $d = 0.92$, 95% CI [0.50, 0.79]. To determine whether target categories appeared categorically abusive to participants, we conducted a pair of one-sample t tests as in Study 1. We tested our means for high-fWHR and low-fWHR targets against the scale midpoint of four for our measure. High-fWHR men were perceived as neither abusive nor nonabusive, $t(90) = 1.35$, $p = .180$, $d = 0.14$, 95% CI [-0.06, 0.35]. Conversely, low-fWHR men were perceived as categorically nonabusive, $t(90) = -5.04$, $p < .001$, $d = -0.53$, 95% CI [-0.74, -0.31].

Discussion

In addition to the continued stereotyping of high-fWHR men as particularly harsh with offspring, this study provided evidence that formidable men appear more prone to commit child abuse relative to those whose appearance connotes less formidability. This could reflect an implicit theory of formidability as covarying with extreme aggression that is inherent in many cases of violence against children and filicide (Daly & Wilson, 1988). Nonetheless, it should be noted that this relative perception was not categorical. That is, as evidenced by the one-sample *t* test, high-fWHR men appeared neither abusive nor nonabusive. Even if there were interference from these ancestrally derived stereotypes, participants could have ultimately recognized the importance of physical evidence beyond the heuristics. Despite this relatively greater appearance toward abuse, low-fWHR men also appeared as categorically nonabusive, which could reflect a modern bias against formidable men when domestic violence is salient, a potential source of evolutionary mismatch that parallels functional shifts in aversions to masculinized features in relatively hostile ecologies (Borras-Guevara et al., 2017; Li et al., 2018).

General Discussion

We demonstrated a consistent pattern of affordance judgments through men's fWHR, wherein high-fWHR appeared more prone to harsher parental behaviors, ranging from disciplinary tendencies to abuse (Brown, Tracy, & Boykin, 2022; Caton & Dixon, 2022; Durkee & Ayers, 2021). Even with this wide scope of potential inferences, our results further demonstrated a granularity for specific components. Effects were most rooted in perceptions of anger, an effect possibly informed by the concomitant inferred anger in high-fWHR structures (Brown, Sacco, et al., 2022; Deska et al., 2018). Critically, perceptions of high-fWHR men's proclivity toward harsh discipline were categorical. Such categorization could reflect the general ease with which perceivers identify formidability in men's faces and how pervasive the signal value of threat could be through fWHR (Geniole et al., 2015).

In addition to stereotypes about high-fWHR men, our results clarified several stereotypes of men with a lack of formidability. Low-fWHR

men appeared categorically likely to employ gentler tactics with offspring while ultimately being perceived as not prone toward discipline. This finding could parallel stereotypes of nonformidable men as more capable of diplomacy and less apparent connotation of anger through their facial structures (Brown, Sacco, et al., 2022; Deska et al., 2023). Nonetheless, inferences for the lack of formidability are relatively inconsistent than those for the presence of formidability, thereby necessitating future work to understand the specific aspect of nonformidable men that could be driving these effects. One possibility is that nonformidability corresponds with facial morphology connoting warmth (e.g., neotenous features), a morphology that is perceived as categorically nonangry (Sacco & Hugenberg, 2009). Given both an interest in people with these structures to solve group problems constructively (Laustsen & Petersen, 2016) and the fact that these facial features connote parental warmth in female faces (Smith et al., 2012), future research could consider stereotypes about constructive parenting informed by male facial structures connoting warmth.

It should be noted that these findings continue to highlight the relative ambivalence perceivers exhibit toward formidable male faces. In fact, this connotation of hostility through men's fWHR could be the crux of a pervasive heterogeneity in findings across cultures and ecologies that stands to mute the observed desirability of masculinized features (Geniole & McCormick, 2013; Lidborg et al., 2022). Valuation of masculinized features has been described as specific for less hostile environments (Scott et al., 2014). However, it remains necessary to identify when costs or benefits are more salient (Lassetter et al., 2021). An understanding of the perceived costs and benefits of formidable fathers could explain the relative boundaries for when paternal investment contributes directly to offspring survival while understanding when such investment is unrelated or even detrimental (Geary, 2000; Sear & Mace, 2008).

Recognition of fWHR's social value appears based on whether formidable men satisfy specific goals. Such goals could include intergroup protection, greater access to resources, and heritable fitness for offspring based on the inferred good genes of formidable men (Brown, Sacco, & Drea, 2022; Brown, Sacco, et al., 2022; Geniole & McCormick, 2013; Hehman et al., 2013;

Valentine et al., 2014). These studies provide further evidence for the importance of context in judgments of fWHR based around the costs and benefits associated with formidability for a relevant goal (Neel & Lassetter, 2019). Despite recognizing possible benefits of formidability in group living, an implicit awareness of the costs could persist.

Limitations and Future Directions

Despite the overall consistency between findings, this research remains amenable to future directions. First, and most critically, these inferences of high-fWHR men were based on heuristic judgments of their interpersonal behavior. Although stereotyping is functional insofar as estimating the likely affordances of a social target before a perceiver decides to interact with them (Neuberg et al., 2020), these results do not track actual intentions of social targets in parental domains. It remains unclear whether a kernel of truth exists in these particular inferences. Future research would benefit from assessing the morphological correlates of men's faces in predicting their actual interest in disciplinary decisions akin to previous research indicating how formidable facial structures accurately connote physical prowess and other behavioral intentions (e.g., Haselhuhn et al., 2013; Zilioli et al., 2015). A study could consider the frequency of different disciplinary strategies while similarly measuring the fWHR of men.

These inferences could certainly function to identify kernels of truth that would have been adaptive in ancestral environments. Perceivers could minimize contact with conspecifics who could threaten a perceiver's inclusive fitness through their offspring in a given ecology. Despite the potential veracity in these inferences of men's actual intentions, consideration for whether these inferences should be used to inform modern-day legal decisions remains erroneous. The kernels of truth remain robust, according to meta-analyses, but these effects remain small and are ultimately a poor basis for determining whether someone could threaten society in modern legal settings (see Foo et al., 2022).

These formidability inferences could represent an evolutionary mismatch with various modern legal protections that ostensibly serve to remove biases and foster fair treatment (see

Li et al., 2018). Heuristics of formidability impede men's access to fair treatment in legal proceedings (Brown, Rodriguez et al., 2017; Wilson & Rule, 2015). Reliance on fWHR biases perceptions of formidable men as hostile and could undermine perceptions of men's ability to provide care (Brown, Bauer, et al., 2021). As evidenced by Study 4, perceivers ultimately relied on heuristics of hostility toward high-fWHR men to some degree. This reliance shaped their perceptions about men's proclivity toward child abuse. Such peripheral cues would ideally be irrelevant in legal proceedings as they would not be diagnostic of guilt. Future research would benefit from considering how formidability inferences interfere with modern legal settings that seek to optimize fairness beyond lay heuristics of physical appearance that should ostensibly not inform modern decision making. For example, if court officials relied on heuristics of formidability, men could be denied custody rights in divorce proceedings based on expectations from judges of adverse experiences for their offspring, even if no evidence exists suggesting they would. Perceptions of threat could further track implicit theories of a Cinderella Effect, wherein genetically unrelated offspring are more likely to experience abuse (Daly & Wilson, 1988). Such expectations could become preclusive toward men with formidable features in cases of adoption.

The covariation between formidability inferences and racial stereotypes affords further opportunities for research while investigating this mismatch. The connection between formidability inferences and threat perceptions is most apparent among Black men (Wilson et al., 2017). Such an implicit theory could lead perceivers to view Black men as more prone toward hostility compared to other social targets (i.e., functional projection; Maner et al., 2005). Future studies could identify potential cross-race expectations that would determine whether perceptions of targets varied across racial categories. Furthermore, research could consider fWHR across target sexes. Women's prioritization of men's formidability to protect offspring may not track expectations for how women discipline offspring due to the lack of diagnosticity of fWHR in women's formidability (Palmer-Hague et al., 2018). Additional studies could identify the features of women that track inferences of their proclivity toward hostility.

Conclusion

A central component of social inferences for men is their formidability. These studies indicate how fWHR informs expectations of men to discipline children. Such inferences could represent an understanding men's historic role in parenting while recognizing how an awareness of parental conflict with offspring could shape these inferences despite the fitness benefits afforded by formidable fathers.

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