Attractive but Unintelligent:

Children and Adults Differ in Beliefs about These Trait's Correlation and Resulting Choices

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Is a belief that attractive women are less intelligent learned through socialization and if so, do children and adults make choices for others and for themselves based on of such beliefs? We find that adults assign attractiveness-enhancing products to women they perceive as unintelligent, but to men they perceive as intelligent. Children do not discriminate in their assignments based on the recipient's gender; they instead assign attractiveness-enhancing products to others—men and women—they consider intelligent. Children's assignments, and adults' assignments to males, thus reflect highlighting—beliefs that attractiveness and intelligence are positively associated. But adults' assignments to women reflect compensation—beliefs that attractiveness and intelligence are negatively associated. This belief reversal emerges post-puberty, suggesting a role of learned objectification of women in creating this disparity. We also find downstream consequences of these beliefs on an individual's own choices: whereas children and men choose intelligence pursuits when they are feeling attractive, women instead do so when they are feeling unattractive. We discuss that the solution to encouraging intelligence pursuit among women is not to make them feel unattractive, but instead to adjust these socially-learned beliefs and be aware of the damage of objectification. (193 words)

Semi-naked, mentally weak, and physically perfect. Not just the centerfold in *Playboy*. These sexualized images of women permeate American culture, celebrity, media, television, reality programming, and social media posts, even those of many women themselves (Fredrickson and Roberts 1997; Gardner 1980; Lundstrom and Sciglipaglia 1977; Stern 1993). The objectification of women in society creates an excessive focus by women on their looks from an early age (Fredrickson and Roberts 1997), and a need to constantly monitor one's appearance (Tiggemann and Kuring 2004). As women aspire for unachievable body standards, they experience anxiety, depression, eating disorders, and body dissatisfaction (Baker, Sivyer, and Towell 1998; Frederickson et al. 1998; Roberts and Gettman 2004). These negative consequences of women feeling unattractive because of media objectification have garnered attention and prompted outrage, but one positive aspect with surprisingly important consequences—that women may also try to resist objectification and as a result shift their choices and efforts away from attractiveness pursuits to more cerebral ones—has not been investigated.

Why might objectification result in women choosing more intelligence pursuits? One reason is that while objectification can result in women feeling unattractive, society also holds stereotypic beliefs about women, that women who are attractive are less intelligent, and women who are intelligent are less attractive. If this belief is ingrained even in women, it follows that women who are feeling unattractive might perceive that if they are not attractive, they must be intelligent. Intelligence pursuits are therefore more identity relevant to them, and they may thus shift their choices toward intelligence pursuits.

This research investigates whether feeling unattractive as a result of unrealistic attractiveness standards imposed by media and society might result in women taking on more

intelligence tasks. We first investigate the nature of beliefs about attractiveness and intelligence among men, among women, and among children, and as applied to men and to women. We then investigate whether consumers, in line with their beliefs, gift attractiveness-enhancing products to more or less intelligent others, and whether the product assignments are the same for children as for adults. If a negative correlation between attractiveness and intelligence is the result of socialization, we expect this association to emerge in adolescence (when socialization occurs) and to be applied to women, but not men. We also investigate a second consequence of such beliefs—on participants' own choice of intelligence pursuits after potentially body-shaming media exposure. In our conclusions, we discuss the implications of our findings.

THEORETICAL BACKGROUND

The Relationship between Attractiveness and Intelligence

More attractive children are more intelligent. A large-scale study by the National Child Development that collected both cognitive tests and attractiveness ratings of all babies born in Britain between March 3-9, 1958 (n = 17,419), at ages 7 and 11 reported a positive correlation between attractiveness and intelligence (r = .38; Kanazawa 2011). The IQs of attractive boys were 13.6 points above average, whereas the IQs of attractive girls were IQ 11.4 points above average (Kanazawa 2011). A positive, albeit somewhat weaker, correlation (r = .13) was also found in a similar US sample comprising over 18,000 respondents. Many factors can explain this positive correlation. For instance, natural selection could result in this positive correlation if women prefer intelligent mates who can serve as providers, and higher-status males are more likely to mate with attractive females (Griskevicius and Kenrick 2013; Hill et al. 2012;

Kanazawa 2004). Attractive people also have greater access to opportunities and resources, starting with more positive attention in school (Kenealy, Frude and Shaw 1988; Langlois et al. 2000), which can result in them becoming more intelligent. But despite the empirically observed positive correlation between these traits, people believe attractiveness and intelligence are negatively correlated, particularly for women (Heilman et al. 2004; Lewis et al. 2012; Schneider et al. 2010).

People might believe attractiveness and intelligence are negatively correlated, and especially for women, for many reasons. First, evolutionarily, men are providers and women are procreators. Intelligence is a desirable trait for a provider, whereas attractiveness is a desirable trait for a procreator whose main concern should be finding a mate and rearing offspring (Griskevicius and Kenrick 2013). Women therefore tend to be seen as feminine and attractive or non-feminine, and therefore less attractive but intelligent. By contrast, men, who are judged by their ability to provide (Griskevicius and Kenrick 2013), by extension can be seen as more attractive if they are more intelligent. Thus, women are associated with warmth but men with competence, and people also believe that warmth and competence are inversely correlated (Aaker, Vohs and Mogilner 2010; Cuddy et al. 2008; Cikara and Fiske 2008; Fiske et al. 2002; Fiske, Cuddy, and Glick 2007; Thompson and Ince 2013). Moreover, people believe that things that are hedonic and for pleasure cannot be functional (Raghunathan, Naylor and Hoyer 2006; Spiller and Belogolova 2017), and whereas attractiveness is more hedonic, intelligence is more functional. Consistent with these views, women are frequently objectified in the media (Gill 2007), folk humor, comics (e.g., *Archie*), Hollywood movies (e.g., *Legally Blond*), and TV shows (e.g., *30 Rock*). For instance, a recent advertisement in the UK noted that putting litter in the trash bin is the "**smart** thing to do" for a man but the "**pretty** (quick) thing to do" for a

woman (see figure 1a). Furthermore, in everyday interactions, males who view women as sexually exploitable are especially likely to evaluate attractive women as unintelligent (Kyle and Mahler 1996; Lewis et al. 2012). Portrayals of women as objects of desire thus further strengthen the belief that attractive women cannot be intelligent, because objects cannot have a mind, and therefore attractive women cannot have a mind.

Figure 1a: Sexism in the Media

One important feature of beliefs is that they usually result from observations of reality (Gneezy, Gneezy, and Lauga 2014; Haws, Walker Reczek, and Sample 2016; Ross and Nisbett 1991). For instance, in other domains, studies have found people believe attractive products are rare (Dai, Wertenbroch, and Brendl 2008), or familiar products are functional (Pocheptsova, Labroo, and Dhar 2010), or things that occur proximally in time must be causally related (Faro 2006), and these beliefs usually correspond largely with reality. So a finding that attractiveness and intelligence correlate positively in reality (Kanazawa 2011) but that people might believe the opposite, at least for women, is surprising. One important distinction with respect to the attractiveness-intelligence observations of reality in the reported field study (Kanazawa 2011) versus elicited-beliefs studies (Griskevicius and Kenrick 2013) is that the longitudinal study was conducted with preteens, whereas beliefs are observed among adults. The preteens were never

asked about their beliefs, and a correspondence between attractiveness and cognitive performance was never measured for adults. It is therefore possible that children have beliefs about a positive association between attractiveness and intelligence, which in turn corresponds with their performance, but among adults who have beliefs that attractive women are less intelligent, performance may be worse on intellectual tasks for attractive women. But why might beliefs and performance diverge between young children and adults, in particular, women?

Socialization and Its Downstream Consequences on Choices

Evidence shows that women's interest in highly cognitive tasks drops in adolescence, which is also the age when they become more socialized. Girls in elementary school are just as interested in math as boys are, and they perform equally well (Voyer and Voyer 2014). By the time they enter high school and college, however, this interest drops off and women become significantly underrepresented in STEM courses at the college level. Specifically, compared with male students, female students are less likely to enroll in advanced math and science courses in high school, and the number of women earning a bachelor's degree in computer science has been dropping in the past two decades (National Science Board 2016). Many reasons have been proposed for this sharp fall in interest among teenage girls in the STEM courses, including a lack of suitable mentors and role models, stereotype threat or that women are expected to perform worse than men in such courses (Spencer and Steele 1999), and the prevalence of gender stereotypes for these professions that discourage women from applying to these professions (National Science Board 2016). But girls also become more "body aware," and their drop in interest in so-called high-intellect courses corresponds with their greater socialization and exposure to depictions of ideal women as attractive but also unintelligent in media and popular

culture, thereby increasing their focus on appearance and aspirations to be attractive. Indeed, popular culture and media widely reflect a caricature of women, but not men, as attractive and unintelligent. In adolescence, beliefs about a negative correspondence between attractiveness and intelligence are likely to emerge.

Although children do understand trade-offs to which they are exposed on a daily basis, for instance, that healthy foods may generally not be tasty (Maimaran and Fishbach 2014; Miller et al. 2011; Robinson et al. 2007; Wardle and Huon 2000), these trade-offs are in domains such as food, where children have opportunities from a young age to learn the correspondence. A focus on social meanings, a higher-order awareness of others' opinions and views, and more complex thinking only develop in children when they reach adolescence (Ginsburg and Opper 1988; John 1999). For example, sixth graders but not preschoolers make inferences about other children based on the shoe brand those children are wearing (Achenreiner 1995; Belk et al. 1984), are more materialistic (Chaplin and John 2010; Richnis and Chaplin 2015), become aware of gender stereotypes (Hughes and Seta 2003; Signorella, Bigler, and Liben 1993), and pay more attention to media and popular culture (Desrochers and Holt 2007; Powell, Szczypka, and Chaloupka 2007). Children younger than 12 years of age have few opportunities to learn about social stereotypes, pay less attention to social aspects of their life, and are less likely to view objects as symbols of identity. Thus, young children, who are pre-socialization and less body conscious, are unlikely to hold stereotypic beliefs about women's attractiveness and intelligence, and are unlikely to understand the objectification of women in culture and media or find this objectification it relevant, because this objectification is generally applied less to children. In fact, if parents reward young children for learning and intelligence with attractive products, including attractive clothes and shoes that make them look and feel attractive, they may even

positively associate intelligence with attractiveness. Also, if children's classification schemas are rudimentary and trade-offs have to be learned, they may associate all good traits in one category to be positive traits, and may therefore associate intelligence with attractiveness.

People usually internalize beliefs that are relevant to them, and they often spontaneously act according to these internalized beliefs whenever a context makes these beliefs salient and the beliefs are diagnostic to their choice or action (Cesario, Plaks, and Higgins 2006; Cesario et al. 2010; Feldman and Lynch 1988; Hong et al. 1997; Job, Dweck, and Walton, 2010; Job et al. 2015; Srull and Wyer 1979). One consequence of beliefs about a negative correspondence between attractiveness and intelligence as applied to women but not to men is that when people are judging women, they may apply their beliefs to evaluating those women. For example, when buying a gift for a woman as opposed to a man, a consumer may be more likely to apply beliefs about attractiveness and intelligence being negatively correlated. Thus, consumers may be more likely to buy attractiveness-enhancing gifts for women they perceive as less intelligent. Children, however, who hold positive beliefs about an association between attractiveness and intelligence may assign attractiveness-enhancing products to more intelligent others, regardless of gender. Furthermore, people may apply these beliefs when making their own choices. Whenever teenage and adult women feel unattractive, they may infer intelligence is a more identity-relevant trait to them. For example, an exposure to advertising in media featuring extreme body standards, social media posts, or even trying on new clothing that does not fit well or simply recalling situations when they may have felt unattractive could make adult women feel unattractive. If they also believe attractiveness and intelligence are inversely related, then if they are feeling unattractive, they may infer they could be more intelligent, and intelligence is a more identity-relevant trait for

them. As a result, they may compensate for feeling unattractive by increasing intelligence-related choices.

Taken together, and more formally, our theorizing thus implies the following:

H1a: Young children associate intelligence with more attractive others.

H1b: Adults associate intelligence with less attractive others.

H2a: Young children allocate attractiveness-enhancing products to intelligent others, regardless of whether the other is a boy or a girl, in line with their beliefs regarding a positive association between attractiveness and intelligence.

H2b: Adolescents and adults allocate attractiveness-enhancing products to less intelligent women, but to more intelligent men, implying that beliefs regarding a negative association between attractiveness and intelligence apply to women but not men.

H3a: Young children make intelligence-enhancing choices for themselves when they feel attractive, in line with their belief about a positive association between attractiveness and intelligence.

H3b: Adult females make intelligence-related choices for themselves when they feel unattractive, in line with their belief about a negative association between attractiveness and intelligence for women. Adult males make fewer intelligence-related choices when they feel unattractive, in line with a positive association from childhood between attractiveness and intelligence.

We present seven studies to test these hypotheses. To show a role of socialization in the development of beliefs about a negative correlation between attractiveness and intelligence of women, we first tested whether young girls and young boys differ in the extent they aspire for intelligence professions (pilot study). We solicited data of different cohorts of children collected over a period of five years to show these aspirations are stable over cohort and unresponsive to

of changes and trends in society over this period. We then tested beliefs regarding attractiveness and intelligence across different age groups. In study 1a, we investigated whether preschoolers perceive more attractive others to be more or less intelligent. In study 1b, we tested whether adults perceive more attractive women to be more or less intelligent. We then tested the downstream consequences of these beliefs on gifting of products to others. In study 2, we employed four samples across different age groups—young pre-socialization children (ages 3-5 and 8-10), post-socialization teenagers (age 14-16), and adults—to test whether children gift attractiveness-enhancing products to intelligent people regardless of gender but adults gift attractiveness-enhancing products to intelligent men and less intelligent women. Finally, we investigated the influence of beliefs on participants' own choices when they are feeling attractive or unattractive. In study 3a, we investigated whether children are likely to choose a more or less challenging cognitive task when they are feeling attractive, in line with their beliefs. In study 3b, we investigated whether adult women, but not men, are more likely to pursue a challenging cognitive task when they are feeling unattractive, in line with their beliefs. In study 3c, we investigated whether adult women are also more likely to pursue a challenging cognitive task when they are feeling unattractive compared to attractive. We conclude the paper with a discussion of the implications of these findings.

PILOT STUDY: PROFESSIONS YOUNG CHILDREN ASPIRE FOR

We solicited data from a local YMCA children center on the professional aspirations of five-year old children who had enrolled in their pre-school program for the five years 2012-2016. All the children fill out a survey individually in which they indicate what profession they aspire

in the future when they graduate the pre-school. The data included responses from 93 girls and 92 boys who completed the program at the preschool over the last five years. Across all of the children, 58 different aspired professions were listed, for example, scientist, doctor, athlete, fireman, cheerleader, performer, prince/ princess. We created a list of all the professions that were listed and recruited two coders (one adult and one ten year old) to code these professions. The adult coder was recruited to acquire an adult perspective on how the professions would be classified whereas the child coder was recruited because children may view professions differently from adults and thus using a child coder allows us to check the extent to which a child's classification of these professions matches an adult perspective. Professions were coded as intelligence professions (those that entail a lot of thinking and studying, e.g., scientist, doctor, engineer, etc.), physicality professions (those that require strength and toughness training, e.g., athlete, fireman, t-rex, superhero, etc.), appearance professions (princess/ prince, cheerleader, television performer etc.), and other professions (bus driver, artist, chef, magician, Santa, spy etc.). Each coder indicated a 1 for one of the four profession categories for the response made by each participant and 0 for the remaining three categories. The inter-rater correlation was high (r = .92) and disagreements were resolved by a third coder after discussion with the other two coders.

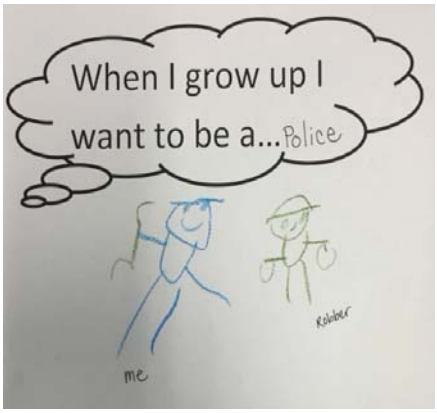
Year-by-year analysis. We analyzed the effect of gender and year on each of the four profession categories separately. A 2 (participant gender: male or female) × 5 (year of data: 2012, 2013, 2014, 2015, 2016) ANOVA on choice of intelligence professions yielded a main effect of gender ($F(1, 175) = 5.68$, $p = .018$), indicating that a larger proportion of young girls (38%) chose intelligence professions compared to the boys (23%). The effect of year and the interaction between year and gender were both non-significant (ps > .20). A 2 (participant gender: male or female) × 5 (year of data: 2012, 2013, 2014, 2015, 2016) ANOVA on choice of

physical prowess professions also yielded a main effect of gender ($F(1, 175) = 56.35$, $p < .001$), indicating that a larger proportion of young boys (55%) chose physicality professions compared to the girls (10%). The effect of year and the interaction between year and gender were both non-significant (ps > .24).

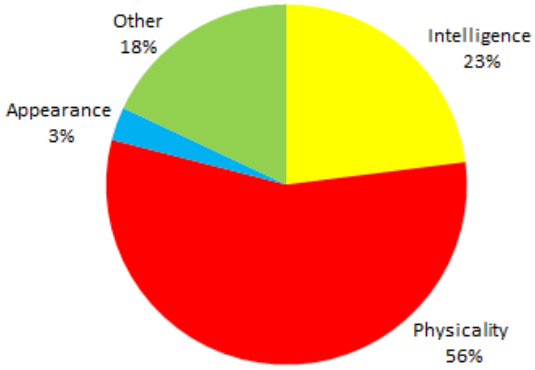
A 2 (participant gender: male or female) × 5 (year of data: 2012, 2013, 2014, 2015, 2016) ANOVA on choice of appearance -based professions also yielded a main effect of gender ($F(1, 175) = 11.84$, $p = .001$), indicating that a larger proportion of young girls (19%) chose appearance -based professions compared to the boys (3%). The effect of year was also significant ($F(1, 175) = 4.84$, $p = .001$), indicating that the 2013 (29%) and 2014 (17%) cohorts had more appearance oriented professional aspirations than other cohorts (2012 – 6%, 2015 – 2%, 2016 – 3%). The interaction between gender and year also was significant ($F(1, 175) = 2.61$, $p = .037$), indicating that girls versus boys in the 2012 (13% vs. 0%) and 2013 (48% vs. 6%) cohorts aspired more for appearance based professions but this difference based on gender was not significant in the other years (2014 – 21% vs. 13%, 2015 – 4% vs. 0%, 2016 – 7% vs. 0%). A 2 (participant gender: male or female) × 5 (year of data: 2012, 2013, 2014, 2015, 2016) ANOVA on choice of other professions also yielded a main effect of gender ($F(1, 175) = 5.29$, $p < .03$), indicating that a larger proportion of young girls (33%) chose other professions compared to the boys (18%). The effect of year and the interaction between year and gender were both non-significant (ps > .54). In sum, young girls compared to young boys aspired more for intelligence professions and for other professions across the years, but young boys more than young girls aspired for physicality professions. While young girls in the 2012 and 2013 cohorts aspired more than young boys for appearance based professions, this difference became not significant for the

latter three years of 2014, 2015, and 2016. The stimuli used to elicit professional aspirations and the data collapsed over years are summarized in Figure 1b.

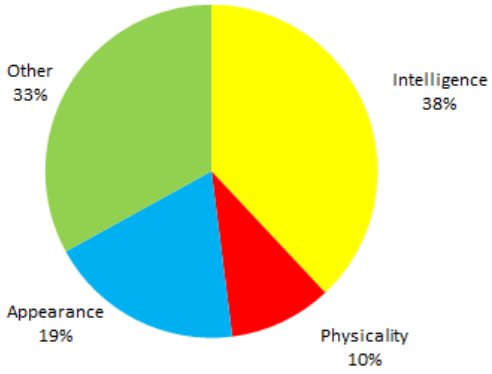
Figure 1b: Examples of Participant Responses and Data Summary



Professional Aspirations of 5 year-old boys (N = 92)



Professional Aspirations of 5 year-old girls (N = 93)



In sum, these longitudinal pilot data revealed that young girls aspire more than young boys for intelligence professions (scientist, teacher, engineer), they also aspire more than young boys for appearance professions (movie star, cheerleader, princess) and other professions (e.g., mom, artist). Of all profession types, most girls aspire for intelligence professions, the next popular category is other professions, and appearance professions only come in third of the four

profession types. In contrast, young boys overwhelmingly aspire for physical professions (athlete, policeman, fireman, t-rex) compared to young girls and compared to other profession types. Intelligence professions come in second in popularity for boys after physical professions, followed by other professions and hardly any boys aspire for appearance based professions. Several important insights can be gleaned from these data – first, that both boys and girls aspire for their own gender stereotypic professions compared to other gendered professions, boys for professions associated with physicality and girls for other (e.g., mom) and appearance professions. Thus, from a young age, society and parents may be setting stereotypic aspirations among their children. Second, importantly, young girls aspire most for intelligence professions whereas among young boys such professions are a distant second. That girls move on later in life to aspiring to maintain appearance and boys to intelligence suggest a somewhat concerning role of stereotypes, society, and socialization on shifts in preferences.

This study thus presents important insights into what young children aspire to be later in life. In study 1a, we investigate how children associate intelligence and appearance and in study 1b we investigate how adults associate intelligence and appearance.

STUDY 1A: FOR PRESCHOOLERS, ATTRACTIVE IS MORE INTELLIGENT

This study was designed to test children's beliefs regarding the association between attractiveness and intelligence, and whether these beliefs are gendered. Preschoolers completed two trials, one in which they were shown pictures of a pair of female targets, and another in which they were shown pictures of a pair of male targets. In each trial, the children indicated which of the two targets was more attractive ("who looks prettier/ more handsome"). The

children also indicated which of the two targets in each pair was more intelligent ("knows the ABCs," a relevant indicator of intelligence to preschoolers). These two items were counterbalanced. This study therefore followed a 2 (target: female versus male) × 2 (participant: female versus male) mixed design in which the dependent variable was whether participants indicated the attractive target was also intelligent or not.

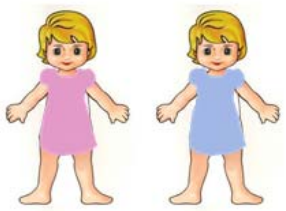
Method

Forty-nine children (age range: 4½ -5½ years; 44% female) participated. The study was conducted in a preschool facility in which each preschooler interacted individually with a research assistant who was blind to the research hypothesis. All children in the relevant age group who were present at the preschool when the study was conducted and whose parents had signed consent forms in advance were invited to participate.

During the session, the children completed several unrelated tasks. During the focal task relevant to this study, the experimenter showed the children a pair of female targets, one dressed in a blue dress and the other in a pink dress, and a set of two male targets, one dressed in a blue t-shirt and the other in purple (see figure 2a). The experimenter asked the children to indicate which female target knows the ABCs (the one wearing the pink or the blue dress), and which male target knows the ABCs (the one wearing the blue or the purple t-shirt). The experimenter also asked the children to indicate which target is prettier (the one with the pink or the blue dress), and which target is more handsome (one with the purple or the blue shirt). We counterbalanced whether the children first saw the male targets or the female targets, the order in which we asked the intelligence and the attractiveness questions, and which of the two targets in each pair appeared on the left or right. We chose this activity because it is something young

children are familiar with, and when conducting research with young children, age-appropriate activities are important (Peracchio 1990). The children then completed some tasks unrelated to this study, received a small thank-you gift for participating, and then returned to their classroom.

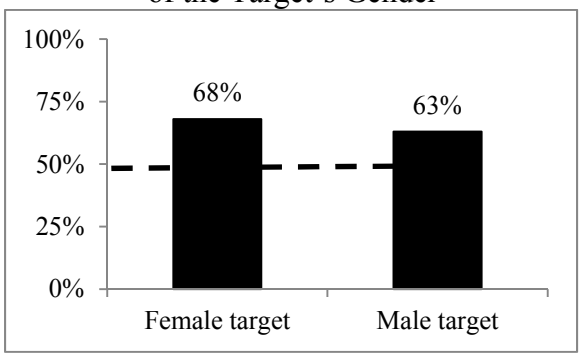
Figure 2a: Girl and Boy Targets, Dresses, and Shirts Used (Study 1a)

Female Targets	Male Targets
	

Results and Discussion

To test whether children associate the more attractive target with intelligence, we coded each response as "1" if the child judged the target knowing the ABCs as more attractive, and "0" otherwise. Overall, children indicated the more attractive target (male or female) also knows ABC. Specifically, 68% of the children indicated that the more attractive female target also knows her ABC (p = .014, one-tailed, binomial tests here and below against 50%) and 63% of the children said that the more attractive male target also knows his ABC (p = .059, one-tailed; see figure 2b). There were no participant-gender or question-order effects. This study thus provides initial evidence that preschoolers associate attractiveness positively with intelligence.

Figure 2b: Percent Respondents Indicating the Intelligent Target is Also Attractive as a Function of the Target's Gender



STUDY 1B: FOR ADULTS, ATTRACTIVE IS LESS INTELLIGENT

This study was designed to test adult's beliefs regarding the association between attractiveness and intelligence. All adult participants evaluated the same target model, Katie, for intelligence. Similar to Study 1a, all adults were shown pictures of a pair of female models, but for half of the participants Katie was the more attractive of two models and for the remainder participants Katie was the less attractive of the two models.

Method

Pre-test. A pretest was conducted to select three models, one who was of average attractiveness and served as our target model, Katie, one model who was significantly more attractive than Katie and so Katie appeared less attractive when paired with this model, Jenny, and a third model who was less attractive than the target model Katie and so when Katie was paired with this model, Sarah, Katie appeared to be more attractive. Forty adults (age range: 18-65; mean age = 37.25; 37.5% female) from Mechanical Turk participated for a small compensation. Participants evaluated three different female models (Jenny, Katie, and Sarah) to identify most and least attractive targets to use in the main study. Participants saw pictures of three college-age women (counterbalanced) and rated them on attractiveness (1 = not at all attractive to 5 = extremely attractive). Repeated measures ANOVA with model as within factor and participant gender as between-subjects factor revealed only a significant effect of model ($F(1, 38) = 49.01$, $p < .001$; main effect of participant gender and participant gender × model Fs < 1). Pair-wise comparisons revealed Jenny was rated as more attractive ($M = 4.13$) than Katie ($M = 3.89$; $t(39) = 1.76$, $p = .08$) who was rated as more attractive than Sarah ($M = 2.70$; $t(39) = 6.11$, $p < .001$). Based on this pre-test, in the main study, participants were exposed to either the

pair of the attractive and control models (Jennie and Katie) or the pair of the unattractive and control models (Sarah and Katie, see Figure 2c).

Figure 2c: Study 1b Stimuli

Attractive and Target Model		Unattractive and Target Model	
			
Jenny	Katie	Sarah	Katie

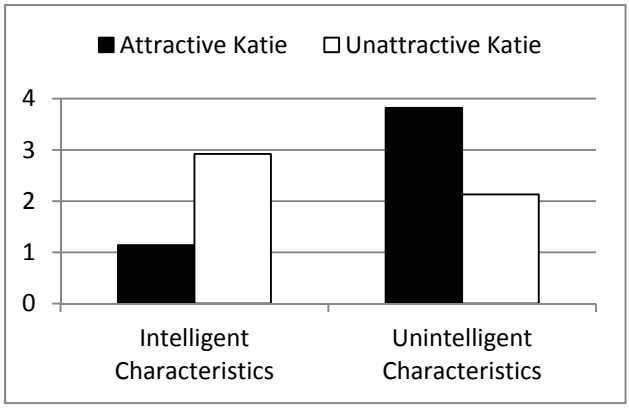
Main Study. Two hundred and forty adults (age range: 18-65, mean age = 37.51; 43.9% female) recruited on Amazon's Mechanical Turk participated for a small compensation. Three participants did not complete the study and therefore their data could not be included in the analysis. Participants were randomly assigned to view one pair of models (attractive and control or unattractive and control) from the pre-test. They then indicated whether Katie or the other model is more likely to have each of five characteristics typically associated with higher intelligence (attends graduate school, studies to be a doctor, majors in chemistry, majors in engineering, is an honors student; $\alpha = .863$) and five characteristics typically associated with lower intelligence (attends cosmetology school, studies to be a hairstylist, majors in hospitality, majors in liberal arts, attends remedial courses; $\alpha = .944$). After responding to these ten measures, participants reported their age and gender.

Results and discussion

To test whether adults associate attractiveness negatively with intelligence we coded a choice of our target model Katie as 1 for all responses, otherwise 0. We then summed each participant's scores on the five intelligence characteristics and the five non-intelligence characteristics. We expect that Katie would be assigned *more intelligence* characteristics when she is the *less* (vs. more) attractive model in the pair (when she is paired with Jenny). She would also be assigned *more non-intelligence* characteristics when she was more (vs. less) attractive of the two models (when she is paired with Sarah).

A mixed ANOVA with 2 (target attractiveness: Katie is attractive vs. unattractive) × 2 (participant gender) as between-subject factors and 2 (characteristic: intelligence vs. non-intelligence) as within-subject factor revealed main effect of characteristic ($F(1, 230) = 15.79$, $p < .001$; $M_{\text{intelligence}} = 2.03$ vs. $M_{\text{non-intelligence}} = 2.99$), and our predicted target × characteristic interaction ($F(1, 230) = 53.40$, $p < .001$, see Figure 2d). No other interactions were significant. As we expected, adult participants assigned Katie fewer *intelligence traits* when she was more ($M = 1.14$) rather than less ($M = 2.92$) attractive model in the pair ($F(1, 230) = 45.51$, $p < .001$). Adult participants also assigned Katie more *non-intelligence characteristics* when she was more ($M = 3.82$) versus less attractive model in the pair ($M = 2.13$; $F(1, 230) = 49.21$, $p < .001$).

Figure 2d: Intelligence and Unintelligence Characteristics Attributed to a Target Model (Katie)



In sum, this analysis shows that the same person (Katie) is assigned fewer intelligence characteristics when she is perceived as more attractive. She also is assigned a higher number of non-intelligence characteristics when she is perceived as more attractive. These beliefs pertaining to the association between attractiveness and intelligence among adults are different from those we observed for children in study 1a, where attractiveness and intelligence were positively associated with each other, for men and for women.

Our focus in study 1b was on beliefs about women because they are the ones objectified more by the media. But an important goal in study 2 is to clarify whether adults also have such beliefs for men. A second goal is to investigate at what age beliefs might reverse for adults. Our position is that these beliefs are a result of socialization and that society makes women acutely body conscious once they enter their teenage years, at which point objectification of women starts. Because objects are necessarily devoid of intelligence, this belief that attractive women are not intelligent emerges. A major goal of study 2 was therefore to investigate the underlying process by investigating whether choices made by pre-socialization younger children (3-5 years of age) and older children (8-10 years) are in line with their beliefs of a positive correlation between attractiveness and intelligence, but those of teenagers (14-16 year olds) and adults instead reflect a negative correlation between attractiveness and intelligence, for women but not men, in line with their beliefs.

Third, a major strength of study 1a and study 1b is that we employed age-appropriate stimuli for preschoolers and for adults; therefore, the belief context for each age group was appropriate and had high external validity. However, a question remains of whether the same materials for children and adults would also show these belief-reversal patterns. To replicate the finding among children and to confirm that adults would show the belief-reversal pattern even

with the same materials, study 2 presented all participants with stimuli similar to those the preschoolers saw in study 1a.

A fourth goal in study 2 is to understand the consequences of these beliefs on the choices consumers make. In particular, do children and adults gift attractiveness-enhancing products differently to people they perceive as less rather than more intelligent? That is, do children gift products that enhance attractiveness to targets they perceive as more intelligent, regardless of the target's gender, in line with their beliefs, but do adults gift such products to targets they perceive as unintelligent, but only when the target is female, in line with their beliefs?

Finally, attractiveness-enhancing products might be seen as more rewarding and if so, it is possible that adults allocate attractiveness-enhancing products to unintelligent others as compensation for their disadvantaged position. Thus, in addition to allocating just the attractiveness-enhancing product to an intelligent or unintelligent other, in study 2, all participants were also asked to allocate a more or less rewarding (indulgent) product to a more or less intelligent other. We expected that if children have a more polarized representation of people as positive or negative and therefore associate traits in a non-compensatory manner, they will also gift more rewarding (indulgent) products to people they consider more positively. That is, if offered a chance to gift a more rewarding (indulgent) product to another person, they are likely to allocate this product to the person they think is more attractive and more intelligent. But if adults gift attractiveness-enhancing products to unintelligent women because they hold beliefs about an inverse correlation between attractiveness and intelligence traits of women, but gift rewarding products to more deserving (presumably more intelligent) others, as we propose, adults will gift the attractiveness-enhancing product to unintelligent others but the rewarding product to more intelligent others. Such a pattern of results will provide greater confidence that

the allocation of attractiveness-enhancing products to unintelligent others may rely on specific beliefs about the association between attractiveness and intelligence among adults and that these allocations are different from an allocation of rewarding products, in general.

STUDY 2: ATTRACTIVENESS PRODUCTS ARE GIFTED ACCORDING TO BELIEFS

Study 2 employed a 4 (age group: 3-5, 8-10, 14-16, adults) × 2 (target gender: male vs. female) × item-gifted (clothing vs. food) mixed design. The first factor (age) was between subjects, and the other factors (target gender and item gifted) were within factors. All participants were presented with a pair of male targets and a pair of female targets, in sequence. One target in each pair was portrayed as more intelligent. The task of all participants was to choose whether to gift a more or less attractive clothing item to either the more or less intelligent target in each pair of modes. Participants also made a similar gifting choice of two food items, which served as a control to ensure that post-socialization participants gift attractive clothing to less attractive women, but do not make similar gifting choices with respect to other non-trait items or when gifting to males. This study therefore was designed to investigate whether children and adults differ in their tendency to compensate, such that children gift attractive items to intelligent others, but adults do so only for male others. When adults are making allocations to female others, they give the more attractive clothing to the less intelligent women.

Method

Two-hundred and thirty-seven participants belonging to one of four different age groups—children 3-5 years old (N = 57, mean age = 4.15, 54% female), children 8-10 years old (N = 60, mean age = 9.8, 50% female), children 14-16 years old (N = 60, mean age = 14.65, 52%

female), adults (N = 60, mean age: 34.7, 50% female)—were recruited using a Qualtrics panel to complete the study online. The non-adult samples were recruited through parental consent, and for these three samples, parents were asked to be present to help as needed when the child completed the study. Parents of the youngest age group (3-5 years old) were additionally asked to read the instructions and record the child's answers, because these children were not reading yet. Respondents were compensated for their participation.

Other than minor differences in the wording of the introduction to facilitate completion of the study by the non-adult participants, the survey was identical for all participants. During the study, all participants saw a pair of female targets and a pair of male targets. In each pair, one target was described as knowing the ABCs, and the other as not knowing the ABCs (counterbalanced for whether the male or female pair was presented first, and if the one on the left or right knew the ABCs). Participants were asked to give one item of clothing (either a pink or blue dress to each girl target and either a blue or purple shirt to each boy target) and give one food item (either cookies or fruits to each girl and each boy target; see figure 3a) as gift by dragging and dropping the item to the target. Existing research shows that cakes and cookies are seen as more rewarding than fruits (Shiv and Fedorikhin 1999). We selected this pair of products to investigate whether children and adults alike would gift cookies (the reward) to the more intelligent target. We also predicted children would gift attractiveness items (clothes) to intelligent targets, suggesting rewards should go to the intelligent, and that adults would gift these items to less intelligent targets when the target was female, suggesting intelligent women are not attractive.

On the next page, participants indicated which dress (pink/ blue) and which shirt (purple/ blue) makes the target look more attractive (order counterbalanced), which target is more like

them (the one who knows the ABC or the other one), and which target they want to be friends with. Respondents answered these questions twice, once for the female targets and once for the male targets (order counterbalanced). Finally, participants provided demographic information.

Figure 3a: Girl and Boy Targets, Dresses, Shirts, Cookie, and Fruit Stimuli Used in Study 2

Knows her ABC	Does not know her ABC	Knows his ABC	Does not know his ABC
			
Pink dress	Blue Dress	Blue shirt	Purple shirt
			
Cookies	Fruits	Cookies	Fruits
			

Results and Discussion

The results of the two younger age groups (3-5 and 8-10) were qualitatively similar, as were the results of the two older age groups (14-16 and adults). Therefore, based on our theorizing, we collapsed the data of these pairs of conditions.

Control tests. First, children and adults did not differ overall in their preference for the target who knew the ABCs, and the liking of the clothing items. They thought the target who knew the ABCs was more like them, they wanted to be friends with the target who knew the ABCs, and they were about equally split when judging which shirt and which dress looked attractive (see table 1).

Table 1: Descriptive Results (Study 2)

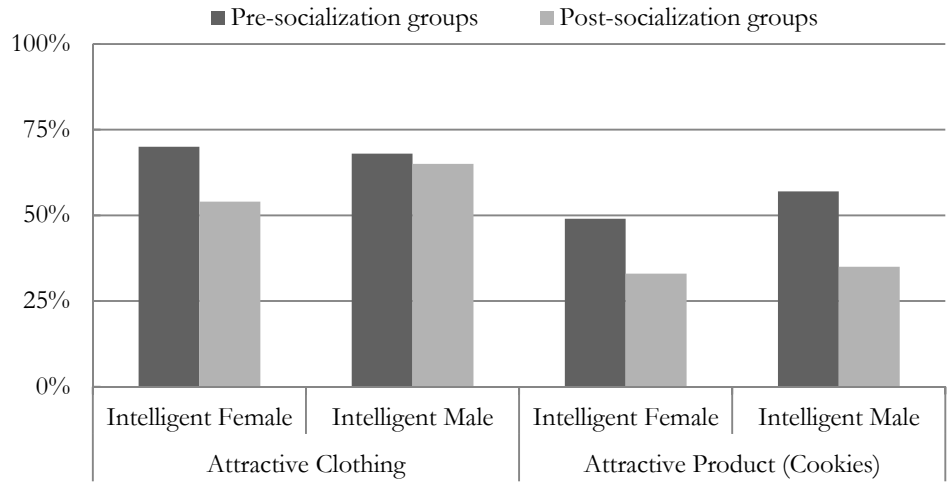
% saying ….	3-5 & 8-10 groups	14-16 and adults	
… girl who knows the ABC is like me	92%	94%	$X^2 < 1$
… I want to be friends with the girl who knows ABC	88%	83%	$X^2 < 1$
… boy who knows the ABC is like me	92%	93%	$X^2 < 1$
… I want to be friends with the boy who knows ABC	87%	81%	$X^2 < 1$
… The blue dress looks more attractive	41%	46%	$X^2 < 1$
… The blue shirt looks more attractive	57%	62%	$X^2 < 1$

Main results. Responses of each participant were coded as follows: (a) a "1" was assigned whenever the clothing a participant found more attractive (dress or shirt) was assigned to the more intelligent target (one who knew the ABCs), and 0 otherwise; (b) a "1" was assigned whenever the more indulgent and rewarding product (cookie) was assigned to the more intelligent target (one who knew the ABCs), and 0 otherwise. This coding resulted in four within-subjects dependent variables: incidence of attractive clothing assigned to intelligent girl, incidence of attractive clothing assigned to intelligent boy, incidence of indulgent food assigned to intelligent girl, and incidence of indulgent food assigned to intelligent boy.

We first investigated to what extent the more attractive clothing was assigned to the more intelligent target. As we expected, 69% of the children in the pre-socialization group assigned the attractive dress to the intelligent girl target (p = .000, one-tailed, binomial tests here and below against 50%), replicating study 1a, and 68% assigned the attractive shirt to the intelligent boy target (p = .000, one-tailed), also replicating study 1a. This assignment was independent of the participant's own gender. Interestingly, although 65% of participants in the post-socialization group also assigned the attractive shirt to the intelligent boy target (p = .000, one-tailed), the intelligent girl target failed to receive the attractive dress more than chance (M = 55%, p > .2; see figure 3b). Taken together, these results suggest that pre-socialization children associate intelligence with looking attractive (study 1a), and they allocate attractiveness-enhancing

products to more intelligent others (study 2). Children do not differ in these allocation preferences based on whether they make an allocation to a male or female target, and the allocations also are independent of the participant's own gender. By contrast, post-socialization teenagers and adults allocate attractiveness-enhancing products to intelligent males, but allocations to female others are more mixed. Thus, adults are less likely to offer attractiveness-enhancing clothing to an intelligent female than to an intelligent male.

Figure 3b: Percent Assigning Attractive Item as Function of Target's Intelligence, Gender, and Respondent's Age



We also conducted a 2 (target: female vs. male) × 2 (product: clothing vs. food) × 2 (participant age: pre vs. post socialization) × 2 (participant's gender: female vs. male) mixed ANOVA on assignment of the more attractive product. A marginal effect of the target ($F(1, 233) = 2.90$, $p = .09$) emerged, such that intelligent male targets were given attractive products (clothes or cookies) more often than intelligent female targets. This effect was qualified by the predicted three-way interaction between target, product, and participant age ($F(1, 233) = 3.81$, $p = .052$; see figure 3b). Replicating study 1a, these data confirmed that children assign attractive clothing to intelligent targets, regardless of the target's gender ($M_{girl} = 69\%$ vs. $M_{boy} = 68\%$). They also

assign cookies randomly to girl and boy targets, not based on the intelligence of the target (cookies; M_{girl} = 49% vs. M_{boy} = 57%). By contrast, adults assign attractive clothing to intelligent male targets, but not to intelligent female targets (M_{girl} = 55% vs. M_{boy} = 65%). They also assign the indulgent product (cookies) to the unintelligent target (M_{girl} = 77% vs. M_{boy} = 75%), regardless of the target's gender, perhaps because high caloric consumption and indulgence is perceived as unintelligent and not aligned with self-control or long-term interests (Kahan and Puhl 2017; Puhl and Heuer 2009).

One possible limitation of this online study is that the parents of the 3-5-year-old children were actively involved in their child's completion of the study. Specifically, the parents were asked to read the questions to their child and record their responses online, so one might wonder if the responses we obtained were indeed provided by the children or by their parents. Although the responses were unlikely to be the parents' rather than the children's, because if they had been, we would have observed no differences between the responses of the 3-5-year-old children and adults, to further mitigate such concerns, we conducted a follow-up study in a preschool facility with children in a similar age group. We used similar stimuli and procedures to those we used in this online study. In this post-test, 45 children (mean age = 5 years 3 months, 43% female) participated in individual sessions and interacted with an experimenter who was blind to the research hypotheses. During the session, the experimenter showed the children two female targets and two male targets and told them that one knew the ABCs and one did not. The experimenter then asked the children to dress the two female targets and the two male targets by physically putting a paper dress (pink or blue) on each female target and a paper shirt (purple or blue) on each male target. Children were then asked to indicate which dress made the female target look prettier (the pink or the blue) and which shirt made the male target look nicer (the

purple or the blue). Similar to the online study, children gave the intelligent target the more attractive clothing: 70% assigned the prettier dress and 60% assigned the nicer shirt to the more intelligent target. These results are almost identical to those obtained in the online study where 69% of the children assigned the prettier dress to the intelligent female target, and 68% also assigned the nicer shirt to the intelligent male target, further increasing confidence that those data indeed reflect the responses of the children and not their parents.

Studies 1a-1b showed differences in beliefs about the association between intelligence and attractiveness among children and adults. Children associate attractiveness with intelligence, whereas adults believe in the opposite correlation for women. In study 2, we found children also gift products that can increase physical attractiveness to intelligent others, whereas adults gift such products to unintelligent women but not to unintelligent men. We also found that adults disproportionately gift indulgent foods, such as cookies, to unintelligent others, men and women, perhaps because they see indulgent foods as an unintelligent food choice or think unintelligent people prefer such foods because such individuals are more impulsive and worse at self-control and long-term planning.

In studies 3a-3c, we investigate the downstream consequence of these differential beliefs of adults and children on their own choices when they are feeling unattractive. Specifically, because children believe attractiveness and intelligence go together, do they choose cognitive pursuits when they are feeling attractive? But because women (not men) are supposed to either be attractive or intelligent, do women choose cognitive pursuits when they are feeling unattractive? Given ethical considerations not to make children feel unattractive and the difficulty in fully debriefing them after such manipulation, we conducted study 3a with children, in which we focused on comparing a feeling-attractive condition with a control condition. But in

study 3b with adults, we investigated feeling unattractive against a control condition, and in study 3c, also with adults, we investigated feeling unattractive against feeling attractive.

STUDY 3A: CHILDREN PURSUE INTELLIGENCE WHEN FEELING ATTRACTIVE

Study 1a showed that children positively associate intelligence with attractiveness, and study 2 showed that children allocate attractiveness-enhancing products to intelligent others, in line with their belief that intelligence and attractiveness go together. The goal of study 3a is to investigate whether this positive association between attractiveness and intelligence also influences the choices children make for themselves, in particular, that feeling attractive results in their assigning more intelligence activities to themselves, regardless of their gender. This study thus followed a 2 (condition: control vs. feel attractive) between-subjects design in which participants assigned at random to either condition made a choice that reflected preference for an intelligence activity.

Method

Sixty-one children (age range: 4-6 years; 55% female) participated in the study and were assigned randomly either to a control condition or an experimental condition in which they were made to feel attractive. Similar to Study 1a, this study was conducted in a preschool facility, and children who had parental permission to participate in this study interacted individually with an experimenter who was unaware of the research hypothesis.

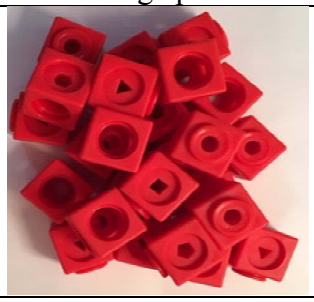
Children were told they would complete a block-counting task. They could choose which of two block-counting tasks they would like to complete: an easy one in which they would count 10 blocks or a more difficult one in which they would count 25 blocks (see figure 4a). The

difficult counting task is the more intelligence-reflective choice. The experimenter, pointing once to the 10 blocks and once to the 25 blocks (order counterbalanced across children), asked the child, “Do you want to show me how you count this pile or this pile?”

Children assigned to the control condition proceeded directly to this block-choice task after the experimenter had greeted them and made them comfortable at the start of the experiment. The experimenter additionally told the children assigned to the feeling-attractive condition, after greeting and them and making them comfortable at the start of the experiment, “Wow, look at you, how pretty/handsome you are today, wow!” (pretty for female participants, handsome for male participants). They then proceeded to the block-choice task. Children in the control condition were told this message at the end of the experimental session, after completing the block-counting task and other unrelated tasks.

After choosing which pile to count, children were asked (a) which pile of blocks was larger and (b) which pile was easier to count. We included these measures as manipulation checks to ensure the children indeed perceived the 25-block pile as larger and more difficult to count. Children did not actually count the pile they chose, as it was not of interest to this study. They then completed some unrelated tasks. At the end of the session, the children were thanked, received a small thank-you gift, and returned to their class.

Figure 4a: Block Piles Used in Study 3a

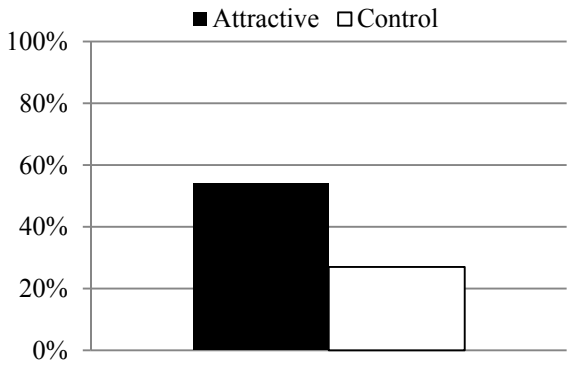
Small pile	Large pile
	

Results and Discussion

Overall, the manipulation-check items indicated that children indeed perceived the piles as intended: all children but one said the 25-block pile was larger, and only 9 of the 61 children (4 from the attractive condition and 5 from the control condition) said it is easier to count 25 blocks rather than 10 blocks. It is possible this misunderstanding arose among these children because they thought counting 25 blocks is also easy.

As we expected, the attractiveness manipulation had a significant effect on the choice the children made, such that 54% of those in the feeling-attractive condition chose to count 25 blocks, the more difficult task that reflects greater intelligence, compared to only 27% of those in the control condition (X^2 (1, N = 61) = 4.39, p = .036; see figure 4b). This difference arose even when we excluded the responses of the nine children who said counting 25 rather than 10 blocks was easier (feeling attractive: 54%; control: 25%, X^2 (1, N = 52) = 4.64, p = .031). Moreover, in an analysis also including the gender of the respondent as an independent variable, the interaction between the participant's gender and the attractiveness manipulation was not significant (p > .25).

Figure 4b: Percent Children Choosing Intelligence Task as a Function of Feeling Attractive



A possible limitation of this study is that merely praising the children by telling them how attractive they are increased their motivation to perform the more difficult task, because they felt happy or liked the experimenter more. Although possible, this limitation does not address the hypothesized difference between children and adults, such that children's motivation to perform increases when they feel attractive, but adults' motivation to perform, especially among females, increases when they feel unattractive, as described next.

STUDY 3B: WOMEN PURSUE INTELLIGENCE WHEN FEELING UNATTRACTIVE

Study 1b showed that adults—men and women—associate lower intelligence with higher attractiveness of women. Study 2 showed that adults—men and women—also allocate attractiveness-enhancing products to women perceived as less intelligent, and these choices do not emerge for allocations to men. Our goal in study 3b is to investigate whether consumers who feel unattractive are likely to make choices for themselves that reflect higher intelligence, and this effect emerges only for women. Thus, in contrast to study 3a, which showed that when children feel attractive, they make choices for themselves that reflect higher intelligence, study 3b examined whether among adult women, this effect reverses, such that when women feel unattractive, they make choices that reflect greater intelligence. Because study 2 showed that men and women apply a negative association between attractiveness and intelligence to their evaluations women but not men, we do not expect men to be affected by the attractiveness manipulation. However, unlike children or men, women will be more motivated to perform when feeling unattractive. We also use a body shaming ad from the media in this study, to investigate the effect of such advertising on consumer choices.

Method

Two hundred and eighty-one adults (age range: 18–84 years, average age: 32.57 years, 39.4% female) from Amazon's Mechanical Turk participated for a small compensation. The experiment comprised two allegedly unrelated parts. Participants were randomly assigned to a control or a feeling-unattractive condition. Control participants were presented with a neutral advertisement showing a cup of tea and then asked to write a paragraph describing how to make a cup of tea and how this action would make them feel. Participants assigned to the feeling-unattractive condition were instead shown an advertisement advocating extreme body standards as attractive. We used two versions of the ad, both adapted from real advertising, to ensure that one advertisement depicted a female model and the other a male model. One portrayed an attractive, toned female model in a bikini and the other portrayed an attractive, toned male model without a shirt (figure 4c). After seeing one of these two advertisements, participants in the feeling-unattractive condition were asked to write a paragraph describing how their body compared to the body of the model in the ad and how the advertisement made them feel.

Next, all participants were directed to an allegedly unrelated study in which they could choose whether to demonstrate their cognitive abilities or to not do so by quitting the task. Participants were tasked with finding as many words as they could within a 15×15 matrix of alphabets (e.g., airplane, baggage; see figure 4d). The task was described as reflecting a person's intelligence. Participants were given two and a half minutes to complete the task and were also given an opportunity to quit the task at any time. Our main dependent measures were how many words participants found and whether they quit solving the puzzle before the end of the assigned time (i.e., clicked "Continue" without continuing to solve puzzles). After this task, participants provided demographic data including age and gender.

Figure 4c: Female and Male Advertising Stimuli Used in Study 3b

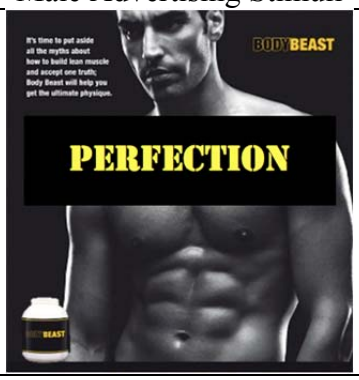
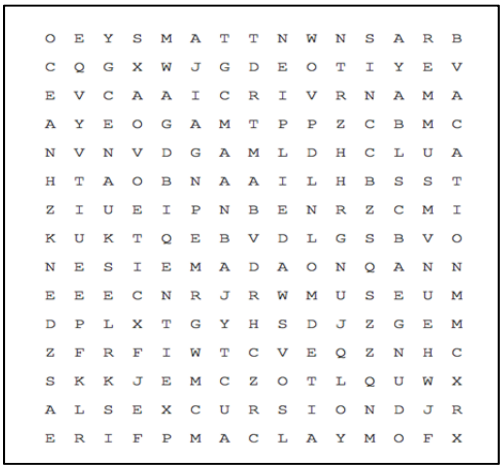
Female Advertising Stimuli	Male Advertising Stimuli
	

Figure 4d: Word Seeking Matrix Used in Study 3B



O E Y S M A T T N W N S A R B
C Q G X W J G D E O T I Y E V
E V C A A I C R I V R N A M A
A Y E O G A M T P P Z C B M C
N V N V D G A M L D H C L U A
H T A O B N A A I L H B S S T
Z I U E I P N B E N R Z C M I
K U K T Q E B V D L G S B V O
N E S I E M A D A O N Q A N N
E E E C N R J R W M U S E U M
D P L X T G Y H S D J Z G E M
Z F R F I W T C V E Q Z N H C
S K K J E M C Z O T L Q U W X
A L S E X C U R S I O N D J R
E R I F P M A C L A Y M O F X

Results

Manipulation check. Two independent raters (blind to the research hypotheses and the gender of participants) coded the open-ended responses to the paragraphs that participants wrote so that we could confirm the manipulations were successful (inter-coder reliability was high, Cohen's $\kappa = .93$, $p < .001$). No participant in the control condition expressed negative attitudes about themselves or their bodies. However, as we expected, we found that a majority of participants in the unattractive condition expressed negative attitudes about their bodies (70%), and we found no significant effect of participant's gender (Males: 70% vs. Females: 70%, $p =$

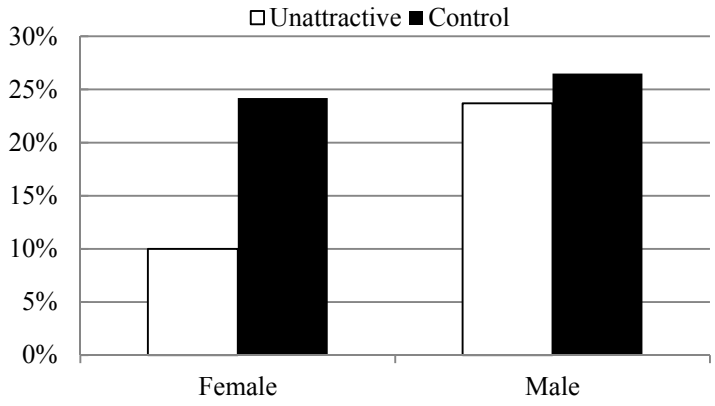
1.00). Furthermore, presumably because we asked participants to compare their bodies with the model's body in the ad, we found no effect of the version of the ad used or a gender by ad interaction (all *p*s > .25), therefore we collapsed the data across the two versions of the ad for all analyses.

Quit rate. Did women feeling unattractive choose to quit the cognitive task less often than controls? A logistic regression with quit rate as the dependent variable and participant's gender (-1 = male, 1 = female), attractiveness condition (-1 = control, 1 = unattractive), and their interaction as independent variables only revealed a predicted interaction (b = -1.21, SE = .64, Wald = 3.56; $p = .059$). Among men, feeling unattractive versus not did not influence the quit rate (23.7% vs. 26.5%; $\chi2(1) = .17$, $p = .68$), but fewer women quit in the unattractive versus control condition (10% vs. 24.2%; $\chi2(1) = 4.31$, $p = .038$; odds ratio = 2.87; see figure 4e).

Number of words found. We prediced that women feeling unattractive will choose intelligence pursuits for themselves more than controls, and will therefore quit less on a cognitive task. But once a person chooses the intelligence pursuit, their performance on this task will not change because feeling unattractive does not improve their ability to think. A feeling-unattractive × participant-gender between-subjects ANOVA on the number of words participants found in the alphabet scramble revealed a two-way interaction ($F(1, 277) = 5.51$, $p = .021$). However, when we exclude from this analysis the participants who quit the word search, this interaction is no longer significant ($F(1, 216) = 2.56$, $p = .11$), as we might expect if feeling unattractive affects choice of intelligence pursits rather than the ability to think. That is, feeling unattractive because of fat shaming in media might make women infer they cannot aspire for a perfect body and their identity is more in line with intelligence. They may therefore work harder on tasks that signal intelligence. But fat-shaming advertising does not affect their ability to think.

Speficially, women who felt unattractive quit less than women who did not feel unattractive, and they quit less than men who felt unattractive or not unattracive. But feeling unattractive did not change their performance. By contrast, the attractivness manipulation did not effect men. These findings are in line with women acting according to a belief that, among women but not among men, attractiveness is associated negatively with intelligence.

Figure 4e: Percent Quitting as Function of Participant Gender and Feeling Unattractive



STUDY 3C: MISFITTING CLOTHING INCREASES INTELLIGENCE PURSUIT

Study 3b induced unattractive feelings as a response to media advertising and comparison to models depicted in such advertising. As we observed effects of feeling unattractive on intelligence pursuit for women but not men, our goal in study 3c is to replicate this effect using a different, ecologically valid manipulation in which we induce women to feel unattractive in a more subtle way, namely, because of the clothes they are wearing. Furthermore, we wanted to investigate the underlying process of whether feeling attractive results in women inferring that attractiveness is more identity-relevant trait for them, but feeling unattractive results in women inferring that intelligence is a more identity-relevant trait for them. As a result women, who feel

unattractive (but not women who feel attractive), are more likely to choose intelligence pursuits. In this study, we therefore randomly assigned participants to the feeling-unattractive condition and asked them to try on a sweatshirt one size too small or one size too large for them, and to the feeling-attractive condition and asked them to try on a sweatshirt of the right size. A final goal of this study was to confirm that women would still choose intelligence pursuits when option to quit is not available.

Pretest. To test whether women feeling unattractive increase importance of intelligence as an identity-relevant trait compared to women feeling attractive, we ran a pretest (N = 50) with female undergraduate students. The participants were assigned to a feeling unattractive or feeling attractive condition through a recall task and then indicated the extent to which intelligence is an identity-relevant trait for women (1 = not at all, 7= extremely). These participants also indicated the extent to which intelligence is an identity-relevant trait for men (1 = not at all, 7 = extremely). This latter measure was taken as a control measure to ensure that women who feel unattractive increase identity-relevance of intelligence for themselves but not in general, for men. As we expected, women made to feel unattractive (vs. not) reported intelligence as a more identity-relevant trait for women (M = 4.25 vs. M = 3.46; $t(48) = 2.10$, $p < .01$). Notably, randomly assigned attractiveness condition did not affect women's evaluation of identity-relevance of intelligence for men ($M_{\text{unattractive}}$ = 4.20 vs. $M_{\text{attractive}}$ = 4.53; $t < 1$), implying that women feeling unattractive increased importance of intelligence only as a self-relevant trait (for women). Importantly, in the attractiveness condition, women indicated that intelligence is a more identity relevant trait for men compared to women ($M_{\text{for\_men}}$ = 4.53 vs. $M_{\text{for\_women}}$ = 3.46; $t(26) = 3.20$, $p < .01$), which lends support to our position that intelligence is a less identity-relevant trait for women compared to men, when they are feeling attractive. However, when they feel

unattractive, they increase importance of intelligence as an identity relevant trait for themselves to the levels similar as men.

Method

Fifty female undergraduate students participated in the main experiment for course credit. Each participant was run individually by a male experimenter. Upon arrival at the lab, participants were instructed that the experiment involved an evaluation of a university-branded sweatshirt. Each participant was then asked to put on the "average"-size sweatshirt (the tags were removed) in front of a mirror. Unbeknownst to participants, they were randomly assigned to one of three conditions, in which they tried on a sweatshirt in their size, a size too small, or a size too large. Participants were asked to keep the sweatshirt on for five minutes to simulate a real wearing experience while completing an allegedly unrelated experiment before returning to the product-evaluation task. This "unrelated" experiment provided our key dependent variable, namely, persistence on a cognitive test.

During this task, participants were seated at a workstation away from the mirror but still wearing the sweatshirt, and were asked to solve as many anagrams (out of eight) as they could. Once finished, participants completed a product-evaluation survey in line with the cover story, in which they rated the sweatshirt for quality, comfort, and attractiveness (1 = *poor quality, uncomfortable, not at all attractive*, 7 = *high quality, comfortable, very attractive*). To rule out alternative explanations for our effects, participants also reported self-confidence, positive mood, and negative mood (1 = *not at all*, 7 = *very much*). We collected these measures because better-fitting clothes could potentially enhance confidence or mood (Solomon and Schopler 1982), and research suggests these factors can reduce cognitive performance (Brinol and Petty 2003; Fazio,

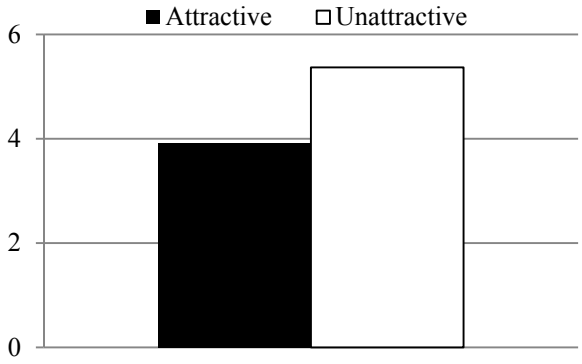
Zanna, and Cooper 1977; Galinsky, Gruenfeld, and Magee 2003; Galinsky et al. 2006; Schwarz and Clore 1983). Larger clothing sizes are also associated with lower self-esteem among women (Hoegg et al. 2014), and lower esteem could be predicted to impair persistence. We found no differences for any of the mood measures based on the clothes-fit condition (p's > .10). Finally, participants reported their regular sweatshirt size, which we compared with the sweatshirt size assigned in the experiment to confirm participants had been correctly assigned to the fit (size match) or non-fit (small or large sweatshirt) conditions. During funnel debriefing, no participant guessed the purpose of the experiment correctly.

Results and Discussion

Data of two participants was discarded because the research assistant failed to record their assigned sweatshirt size. The anagrams were scored for correctness (0 = incorrect or no solution, 1 = correct solution), and correct scores were summed for each participant to form a persistence index. An ANOVA conducted on this index revealed that participants in one-size-smaller (M = 5.29) or one-size-larger sweatshirts conditions performed similarly (M = 5.55; F < 1). As a result, and because the two conditions were also conceptually similar, we pooled the data from these two conditions. Comparing the pooled misfit (feeling-unattractive) conditions against the feeling-attractive condition in which participants wore fitting sweatshirts, we found that feeling-unattractive participants worked significantly harder (M = 5.37) on the anagram task than the feeling-attractive participants (M = 3.92; $t(46) = 2.07$, p = .044). Sweatshirt ratings did not differ between the conditions (ps > .30), presumably because the manipulation was subtle and nobody was assigned to wear an excessively large or small sweatshirt. Participants' mood and confidence also did not differ between conditions (ps > .13), ruling out those factors as

potential explanations for the observed effects. These results demonstrate the consequences of feeling unattractive on intelligence pursuit, using a manipulation of unattractiveness that is subtle and ecologically valid, associated with wearing slightly ill-fitted clothing. This result, in combination with the result from the pretest, implies that women who feel attractive consider intelligence a more identity-relevant trait for men but when they feel unattractive they increase importance of intelligence as an identity-relevant trait for themselves. They also choose intelligence pursuit in line with the increased identity relevance of intelligence to them.

Figure 4f: Number of Anagrams Solved Correctly as a Function of Feeling Attractive



GENERAL DISCUSSION

Across seven studies, we showed differences between children and adults in how they associate attractive people with intelligence (studies 1a-1b), how they gift products to others based on these beliefs (study 2), and downstream consequences on their own choices based on these beliefs (studies 3a-3c). We found that children, especially girls, aspire for intelligence professions. Children also believe that a more attractive other is more intelligent, regardless of the child's own gender or gender of the other. Preschoolers indicated that a doll representing a

person that they thought was more attractive was also more likely to know her ABCs (study 1a). On the other hand, adults—men and women—associated the same woman with less intelligence when she appeared more attractive (study 1b). Children and adults also gifted attractiveness-enhancing products to others based on these beliefs. Children were more likely to gift attractiveness-enhancing products to intelligent others, but adults made similar assignments only when the other was a man but not a woman (study 2). We also found that very young children (from age 3 to 10) highlighted their choices such that attractiveness enhancing products were offered to more intelligent others, more than chance. These children did not offer more indulgent products, such as cookies, to more intelligent others. These data therefore showed that attractiveness and intelligence, but not indulgence and intelligence, are positively associated for young children. Teenagers and adults, however, were significantly less likely to offer attractiveness-enhancing products to more intelligent women than men. In line with a belief that attractiveness and intelligence go together, children chose to engage in a task demonstrating greater intelligence when they were feeling attractive than not (study 3a). Adult women, however, in line with a belief that attractiveness is negatively related to intelligence for women, chose an intelligence pursuit after exposure to a body-shaming advertisement that made them feel unattractive. Similar exposure to a body-shaming ad did not affect men's choice of intelligence pursuits (study 3b). A final study confirmed that even subtle misfit clothing manipulation can make women feel unattractive, and women who are feeling unattractive perform better on a cognitive task compared to women who are feeling attractive, because they increase importance of intelligence as an identity-relevant trait (study 3c). Overall, the data showed differences in attractiveness-intelligence beliefs among children and adults, that beliefs pertaining to women but not men change in teenage when children become socialized, that

children and adults assign products to others according to their beliefs, and that their beliefs influence their own choices.

These findings are important for several reasons. First, they show that stereotypic thinking is not ingrained in young children and that it develops later in life. It is the result of pervasive social stereotypes in media and pop culture rather than something evolutionary that little children are born with. In fact, children positively associate intelligence with attractiveness. Probably, neither belief is correct—neither attractiveness, nor unattractiveness, is inherently, genetically associated with higher intelligence. The positive correlation between attractiveness and intelligence Kanazawa (2011) found among children might be due to the fact that teachers tend to favor attractive children more than unattractive ones. And less attractive women seem to be more intelligent only because they may be seeing intelligence as a more self-relevant trait when they are made to feel unattractive. The important takeaway from our research is that feeling unattractive increases women's intelligence pursuits. This finding is troubling, because we would expect that feeling one's best boosts confidence and therefore results in pursuit any tasks of one's choosing. Second, these findings show that intelligence is associated with attractiveness but not generally with rewarding outcomes such as indulgent foods. Thus, anyone can earn a reward, and in fact, among adults, the reward is usually assigned to unintelligent others. The assignment of cookies by adults to unintelligent others might reflect another belief, namely, that less intelligent people make bad food choices. Future research could explore this possibility. Third, knowing that beliefs change in adolescence is important. This finding implies that from childhood, parents can perhaps do more to praise their daughters for their intelligence rather than their looks. Rather than referring to their daughters as pretty princesses and therefore

teaching their children to strive for looks, parents can perhaps do more to refer to their daughters as smart future leaders, computer scientists, astronauts, educators, and so on.

Our position is that women recognize a trade-off between attractiveness and intelligence for them and therefore, when they feel unattractive, they infer intelligence is more important to their identity and they strive to be intelligent. An alternative account could have been that women react against feeling unattractive by doing anything to show they are accomplished. This account is unlikely to be true, because in study 2, we found that adults also assign attractiveness-enhancing products to others based on intelligence of those others. A reactance account would imply their own choices are influenced by feeling unattractive but that they do not assign attractiveness-enhancing products differently to intelligent men versus women. But one future direction of this research could be to investigate whether the effects of feeling attractive or unattractive on cognitive performance are strategic or automatic among women. In particular, study 3b compared feeling unattractive to a control condition, and study 3c compared feeling unattractive against feeling attractive to ensure that feeling attractive does not result in choice similar to feeling unattractive among women. We found that feeling unattractive increases intelligence pursuits of women compared to a control condition (study 3b), and this comparison was our focus in this paper, because our interest was in whether objectification of women can increase intelligence choices. The data also showed that feeling attractive reduces intelligence pursuits relative to feeling unattractive (study 3c).

Although increased intelligence pursuits when feeling unattractive is likely to be a result of women considering intelligence more important to their identity, and reduced intelligence pursuits when feeling attractive is likely to be the result of their considering attractiveness more identity relevant than intelligence, we do not investigate whether this effect is spontaneous or

strategic. Given that assignments to other people follow choices women make even for themselves, we consider the effect to be a spontaneous application of learned beliefs about attractiveness and intelligence. But one possibility is that women strategically manage pursuit of intelligence to be perceived as even more attractive. That is, because women know that others see women who are less intelligent as more attractive, when they are feeling attractive, they strategically appear less intelligent in order to be perceived as even more attractive. Only when they are feeling unattractive do they stop downward monitoring their intelligence and pursue more intelligent tasks. The finding that children and men who are feeling attractive rather than unattractive perform better cognitively could suggest that women are strategically down monitoring their intelligence to appear attractive, and only when they appear lacking in this important trait do they compensate by showing even more intelligence. This possibility awaits future research.

At first glance, these findings appear to be counter to what findings on stereotype threat (Steele and Aaronson 1995; Steele, Spencer, and Aaronson 2002) might predict. Those findings have shown that when people are presented with stereotypes applicable to them that highlight deficiencies on an ongoing task, they perform worse on such tasks. The stereotype-threat findings might predict that reminding women that they are women when they are engaged in cognitive tasks would result in their performing worse on cognitive tasks because they should want to strive to be attractive and thus infer they are not intelligent. Instead, our results are more aligned with a coping mechanism whereby women who feel unattractive infer intelligence could be more relevant to them and thus work harder on cognitive tasks. Our results are also aligned with the stereotype-threat findings, because women who feel attractive are indeed likely to work less on cognitive tasks, as those studies might have predicted. But the reason women might work

less on cognitive tasks could be that being reminded one is a woman, and an attractive one, may result in efforts to become more attractive. Knowing that society perceives attractive women as less smart might result in women strategically managing their portrayed intelligence. Thus, our findings suggest that stereotyping women as "women" when they engage in cognitive tasks could result in worse or better cognitive performance, depending on whether the women feel attractive or unattractive. These results thus suggest boundary conditions and a possible alternative account for the stereotype-threat findings, at least as those findings might apply to women and their performance on intelligence tasks.

The finding that women choose cognitive tasks after body-shaming advertising exposures or other situations that make them feel physically unattractive is not cause to rejoice. First, the finding that women choose cognitive tasks less when they are feeling attractive is problematic. Society puts a premium on women's looks, and women strive to appear attractive. When they are striving to be attractive, if they automatically also switch off cognitively, they can indeed be reinforcing this stereotype. They may even be doing so non-consciously or strategically because they believe that being less smart may make them appear and feel more attractive or fit in better with society's expectations of women—future research should investigate these propositions. Second, the fact that women work harder on cognitive tasks when they are feeling unattractive is also not cause for celebration. Feeling unattractive can lead to many problems, including depression, body issues, eating disorders, and low life satisfaction. Everyone deserves to feel and look their best and perform optimally cognitively. The solution to encouraging women to choose cognitive tasks is not to make them feel unattractive, but to break the stereotypic beliefs propagating that attractive women are less intelligent. Making women themselves aware of the influence of their beliefs on their own actions and choices may be a first step toward motivating

them to not trade-off looking attractive with being intelligent. Presenting positive role models may also help to address this issue. Future research should investigate whether making women aware of these beliefs can result in a rebound of cognitive performance when they are feeling attractive. Finally, the fact that adults assign attractiveness-enhancing products based on their beliefs propagates the stereotypic beliefs. Broader awareness among adults of how their beliefs are securing stereotypic beliefs about women could also help address the disparity.

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