

Can Marketer Actions that Increase Consumers Attractiveness Reduce their Cognitive Choices?

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## ABSTRACT

This research investigates downstream effects of marketer actions, such as the use of body-shaming ads, attractiveness-enhancing clothing, and body-focused social media posts, on cognitive pursuits among consumers. Such actions can evoke feelings of attractiveness (unattractiveness) among consumers, which can reduce (increase) cognitive pursuits among women, but not men or children. First, we find, adults, but not children, hold beliefs that attractive women are less intelligent. Second, we find, attractiveness feelings can cue these available beliefs among adults. Third, we find, women, but not men, perceive these beliefs as self-diagnostic, becoming less (more) motivated to pursue cognitive tasks when feeling attractive (unattractive). Similar effects are not observed among preschoolers who do not have such beliefs. We discuss implications for consumer welfare. (120 words)

*Keywords:* Gender, Beliefs, Motivation, Children

From body-shaming advertisements, to shopping for attractiveness-enhancing products, to posting selfies on social media, consumers can be left feeling attractive or unattractive within moments in an image-obsessed society. This research examines whether such marketer actions that result in consumers feeling attractive or unattractive can affect their choice of cognitive pursuits. On the one hand, feeling attractive is known to improve confidence in one's abilities (Fishbach and Labroo, 2007), which might increase preferences for challenging cognitive tasks. On the other hand, media portrayals, pop-culture, folk humor, and TV shows (e.g., *30 Rock*) often depict attractive consumers, especially women, as less intelligent (Heilman, Wallen, Fuchs, and Tamkins, 2004). While consumers consider both attractiveness and intelligence as important traits (Fiske, Cuddy, and Glick, 2007), such media portrayals substantiate a belief that attractive women are unintelligent, because consumers perceive such co-occurrences of events as representations of reality (Gilbert, 1991). Furthermore, consumers act in accordance with beliefs that are perceived as self-diagnostic (Cesario, Plaks, and Higgins, 2006; Job, Dweck, and Walton, 2010; Srull and Wyer, 1979). Factors that increase an accessibility of beliefs that attractive women are unintelligent therefore could impair cognitive pursuits among women if these beliefs are perceived as self-diagnostic by them. How attractive (or unattractive) a consumer feels could be an important, highly pervasive but not yet investigated factor to cue such beliefs.

If feeling attractive cues these attractive-is-unintelligent beliefs, then women may place a greater weight on being attractive, and reduce cognitive pursuits, if they perceive the beliefs to be self-diagnostic. By contrast, feeling unattractive, women may place a lower weight on being attractive, and boost cognitive pursuits. Men are generally not subject to the attractive-is-unintelligent belief. Consequently, the belief, even when cued after feeling attractive or unattractive, should not be perceived as self-diagnostic to the same extent by them, and should not affect their cognitive pursuits.

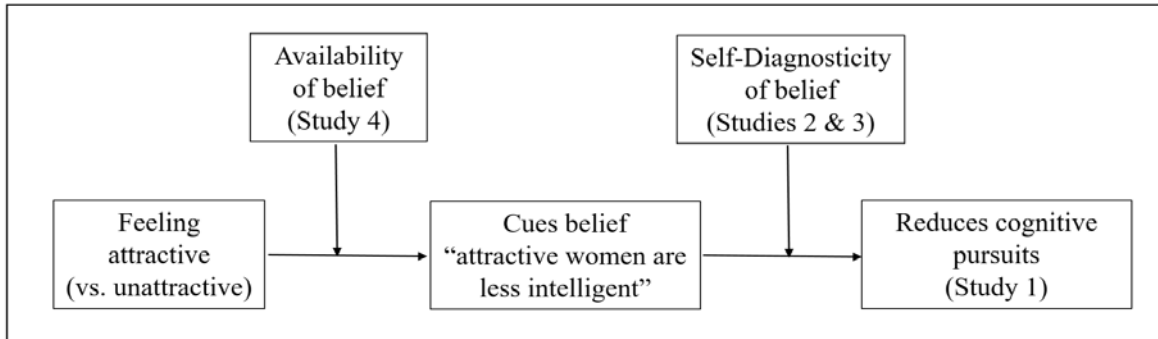
An important precursor to any beliefs impacting behavior is existence or availability of such beliefs to begin with (Devine, 1989; Fitzsimons and Shiv, 2001; Folkes, 1988; Higgins, 1989; Menon, Raghuram, and Schwarz, 1995). Young children, boys and girls, while they do stereotype and make choices based on gender and race (Bigler and Liben, 2006; Serbin et al., 2001), are unlikely to hold the attractive-is-unintelligent beliefs. These more complex beliefs require compensatory thinking—the ability to make trade-offs and infer more of one attribute

implies less of another—a skill that develops later, around age 7 (Inhelder and Piaget, 1969; Stone, Brown, and Jewell, 2015). Four- and five-year olds instead classify objects as good or bad and show little compensatory thinking (Flavell, 1963; Ginsburg and Opper, 1988). Furthermore, if the attractive-is-unintelligent belief develops over time from media exposures, as we postulate, then children this age are less likely to consume and understand such media. Thus, by employing a sample of preschoolers, we moderate the availability of attractiveness-intelligence beliefs and the effects of feeling attractive on cognitive pursuits. Among 4-5 year olds who do not hold the attractive-is-unintelligent belief, when they feel attractive, we expect they might increase cognitive pursuits because, as noted previously, feeling attractive can lead to general good feeling about oneself, which increases cognitive pursuits (Fishbach and Labroo, 2007). Only for adults, who hold these beliefs, we expect feeling attractive to increase belief accessibility. Furthermore, we expect belief accessibility will reduce cognitive pursuits only when the beliefs are perceived as self-diagnostic, i.e., among women but not men.

Notably, feeling overtly sexualized has been linked to lower grades among girls in middle school (ages 11-15; McKenney and Bigler, 2014; 2016). But sexualization is not the same construct as attractiveness, though they are often related. Our focus is on marketing stimuli that increase feeling attractive (or unattractive). That merely feeling attractive (vs. not) could bring about such effects remains an important, open question.

We report two pretests (in the Web Appendix) and four studies testing this framework (Figure 1). The two pretests first show that on average, adults believe that attractive women, but not men, are less intelligent, but children do not hold this belief. Studies 1-2 then demonstrate the basic effect—that feeling more (vs. less) attractive *decreases* women’s motivation to work on a cognitive task. Study 2 further shows this effect manifests only among women but not men. Together, the data suggest feeling attractive cues the “attractive is unintelligent” belief that affects cognitive motivation among women, for whom the belief is perceived as self-diagnostic. In study 3, we consider consequences of body-shaming advertisements and show the converse - feeling *unattractive* instead *increases* women’s motivation to pursue a cognitive task. Importantly, across studies 1-3, we find these effects are motivation rather than ability-based. Finally, to implicate a role of belief availability in impacting motivation, in study 4 we show an important boundary condition: when 4-5 year old children (who do not hold such beliefs) feel attractive, their motivation to work on an age-compatible cognitive task *increases*.

Figure 1: Theoretical Model



### Pretests 1-2: Attractiveness-Unintelligence Beliefs among Adults and Children

A pretest ( $N = 274$ ) confirmed that adults hold the belief that attractive women (but not men) are less intelligent and also that such beliefs are perceived as more self-diagnostic for women than for men (Web Appendix A). First, reflecting availability of such beliefs, we found adults endorsed the belief that attractive women are less intelligent more strongly than they endorsed the belief that attractive men are less intelligent ( $p < .001$ ). Furthermore, women endorsed these differential beliefs more strongly than men participants did ( $p < .001$ ), suggesting they see them as more self-diagnostic. Self-diagnostic information is typically endorsed more strongly and is more accessible in minds of consumers.

A second pretest ( $N = 41$ ) confirmed that young children (preschoolers 4-5 year olds) instead associate more attractive people, men and women, with being more intelligent (Web Appendix B). Using age-appropriate stimuli and methodology to probe the kinds of associations preschoolers have about the relationship between a person's attractiveness and intelligence, the experimenter presented each child individually with pictures of a pair of girls or a pair of boys. The experimenter first probed which of the two girls (boys) appears more attractive, and then which one is more intelligent. Regardless of gender of the participant or the target presented, children indicated the model who looks more attractive is more intelligent.

These pretests thus established (a) among adults, both men and women believe, on average, attractiveness is inversely correlated with intelligence more so for women than for men, (b) women endorse this belief more strongly than men do, consistent with a possibility this belief is more self-diagnostic to them, and (c) young children do not hold a belief that attractive women

are less intelligent; to the contrary, they associate attractive people, men and women, with more intelligence. We now turn to investigating our core propositions that (a) women, but not men, will be less motivated to pursue cognitive tasks when they are feeling attractive, because merely feeling attractive can make these self-diagnostic beliefs accessible to women, and (b) young girls will not show similar effects because they do not hold similar attractiveness-intelligence beliefs.

### **Study 1: Attractiveness Decreases Cognitive Pursuits among Women**

In study 1, we investigate how feeling attractive impacts cognitive pursuits among adult women. If merely feeling attractive increases accessibility of the “attractive women are less intelligent” belief and women consider this belief to be self-diagnostic, then women will be less motivated to pursue cognitive tasks, when feeling attractive. We employ a subtle but naturalistic manipulation of feeling attractive—trying on clothes—and a cognitive task using a real behavioral dependent variable.

#### **Method**

Fifty female undergraduate students completed this experiment individually for course credit in the presence of a male experimenter. The choice of a male experimenter was intentional, to increase attractiveness concerns among our women sample. Upon arrival at the lab, the experimenter asked each participant to put on a sweatshirt (with tags removed) in front of a mirror for a product testing exercise. Unbeknownst to participants, we randomly assigned them to one of two conditions: a feeling more-attractive condition, in which they tried on a sweatshirt in their correct size, or a feeling less-attractive condition, in which they tried on a sweatshirt one size too small or too large. Participants kept the sweatshirt on for five minutes to simulate a wearing experience, while completing an allegedly “unrelated” experiment, before providing product-evaluations in line with the cover story. This “unrelated” experiment provided our key dependent variable, namely, motivation to pursue a cognitive task.

During the cognitive task, participants solved as many anagrams (out of eight) as they could while still wearing the sweatshirt (Web Appendix C). Then, in line with the cover story, they rated the sweatshirt on different dimensions, such as quality and comfort. As control measures, participants also reported self-confidence and mood. We collected these measures

because better-fitting clothes could potentially enhance confidence or mood. Notably, these factors should improve cognitive pursuits (Fishbach and Labroo, 2007) and not reduce it, as we predict. Funnel debriefing revealed no participant correctly guessed the purpose of the experiment.

## Results and Discussion

Consistent with our predictions, we found participants in the feel more (vs. less) attractive condition attempted *fewer* anagrams ( $M_{\text{more-attractive}} = 5.23$ ,  $SD = 2.77$ ;  $M_{\text{less-attractive}} = 6.74$ ,  $SD = 1.89$ ;  $t(46) = 2.153$ ,  $p = .037$ )<sup>1</sup>. There were no differences between those who wore one size smaller ( $M = 6.58$ ,  $SD = 2.02$ ) or one size larger ( $M = 7.09$ ,  $SD = 1.64$ ;  $p > .525$ ).

We then coded each anagram for correctness (1 = correct, 0 = incorrect/no solution), summed these scores for each participant, and calculated percentage-correct by dividing number of correct anagrams by number of attempted. If feeling attractive reduced participants' ability to solve anagrams, we should expect lower percentage of anagrams solved in the more (vs. less) attractive condition. We find no such difference between the two conditions ( $M_{\text{more-attractive}} = 80.5\%$ ,  $M_{\text{less-attractive}} = 80.9\%$ ,  $p > .969$ ), indicating that feeling attractive did not reduce ability but decreased their motivation to engage in the cognitive task. Finally, the attractiveness manipulation did not affect any control variables (mood, confidence;  $ps > .130$ ) and none of them had a significant effect on anagrams attempted or correctly solved ( $ps > .369$ ; Web Appendix C). This evidence gives confidence that feeling attractive reduced cognitive pursuits because of beliefs rather than other factors.

Thus, using an ecologically valid subtle manipulation of clothing, we show women who feel more attractive are less motivated to work on a cognitive task. We also provide an important boundary condition to the confidence literatures by showing feeling attractive, which typically should improve confidence, can reduce rather than increase cognitive pursuits among women.

## Study 2: Attractiveness Decreases Intelligence Pursuits among Women but not Men

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<sup>1</sup> Two data-points missing; See Web Appendix D for data exclusion notes for all studies.

Study 2 included also men to confirm the effect of feeling *attractive* (vs. not) on cognitive pursuits arises for women but not men. We additionally used a different manipulation of feeling attractive.

## Method

Six hundred and twelve adults (mean: 32.05 years, 53.3% women)<sup>2</sup> from Prolific panel were randomly assigned to a feeling-attractive or a control condition. Participants assigned to the feeling-attractive condition were asked to describe an attractive selfie, including what the picture shows, how attractive they look and how they feel about themselves in that picture. Control participants instead described how to make a cup of tea. Coded responses confirmed successful feeling-attractive/control manipulation.

We then directed participants to a second, allegedly different, experiment, described as a test of their cognitive abilities, to find as many of 14 words hidden within a word-search matrix in two minutes (Web Appendix E). To insure we measured motivation, participants were instructed: “You can choose not to work on it at all or work as little as you like.” Our main dependent measure was how many words participants attempted to find in the puzzle.

Next, we measured participants’ beliefs in the association between attractiveness and intelligence: “I think in general, people often assume ... attractive women are less intelligent” and “attractive men are less intelligent” (1 = strongly disagree, 7 = strongly agree). The main result of interest, replicating results of pretest 1, was that participants endorsed the belief that attractive women, more than men, are less intelligent ( $M_{\text{target=women}} = 4.66$ ,  $SD = 1.53$  vs.  $M_{\text{target=men}} = 3.66$ ,  $SD = 1.55$ ). As in the pretest, to reduce socially desirable responding, and as is common in similar research, we framed this question as asking about other people rather than the respondent specifically. Finally, we measured mood (happy, sad; 1 = not at all, 7 = very much;  $r = .414$ ), age and gender; no effects of interest emerged.

## Results and Discussion

We expect that feeling attractive (vs. not) will reduce motivation to pursue the cognitive task among women but not men. A 2 (condition: selfie vs. control)  $\times$  2 (participant gender: male

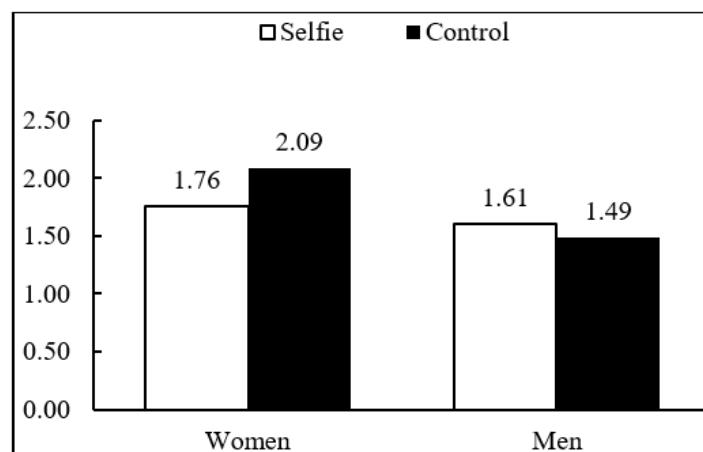
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<sup>2</sup> Fourteen data-points missing.



vs. female) ANOVA on words searched revealed a main effect of participant gender ( $F(1, 594) = 8.604, p = .003$ )<sup>3</sup>; women attempted more searches than men which suggests women are generally more conscientious on such tasks than men ( $M_{\text{women}} = 1.94, SD = 1.45$  vs.  $M_{\text{men}} = 1.55, SD = 1.70$ ). A predicted (marginal) interaction also emerged ( $F(1, 594) = 3.085, p = .080$ ): feeling attractive (vs. not) did not impact word search among men ( $M_{\text{selfie}} = 1.61, SD = 1.97$  vs.  $M_{\text{control}} = 1.49, SD = 1.41, t(594) = .810, p > .418$ ), but reduced word search among women ( $M_{\text{selfie}} = 1.76, SD = 1.39$  vs.  $M_{\text{control}} = 2.09, SD = 1.48, t(594) = 3.411, p = .001$ ; Figure 2).

Figure 2: Cognitive Pursuit as a Function of Participant Gender and Feeling Attractive



As in study 1, we distinguished motivation from ability by looking at percentage of correctly found words within attempted words. Replicating study 1, we find no effect of gender, condition, or their interaction on percentage of correct word-searches ( $M_{\text{women}} = 94.3\%$  vs.  $M_{\text{men}} = 94.2\%$  and  $M_{\text{selfie}} = 93.5\%$  vs.  $M_{\text{control}} = 94.9\%$ ,  $ps > .448$ ), suggesting that feeling attractive did not reduce cognitive ability but rather decreased motivation to engage in the task.

Study 2 thus showed that women and men both endorse the belief that attractive people are less intelligent more strongly for women rather than men. Study 2 also showed that feeling attractive reduces cognitive pursuits among women but not for men, suggesting feeling attractive makes these beliefs accessible. And because these beliefs are self-diagnostic for women their cognitive pursuits are impacted accordingly. We also employ another realistic manipulation of feeling attractive that is common in the marketplace—thinking about an attractive selfie.

<sup>3</sup>Belief strength correlates with but does not adequately isolate/mediate the effect of belief accessibility.

### Study 3: Unattractiveness Increases Intelligence Pursuits Only Among Women

Studies 1 and 2 investigated the effects of feeling attractive on cognitive pursuits. Conversely, study 3 investigated whether feeling *unattractive* (vs. not) increases motivation to pursue cognitive tasks, among women but not men. We also employed a body-shaming advertisement to investigate the effect of such media portrayals on cognitive pursuits.

#### Method

Two hundred ninety-eight adults<sup>4</sup> (18–74 years, 43.4% women) from MTurk were randomly assigned to a feeling-unattractive or a control condition. Participants assigned to the feeling-unattractive condition saw an advertisement advocating extreme body standards as attractive. We counterbalanced whether participants viewed a female or a male model in the advertisement. Adapted from real advertisements, both advertisements portrayed attractive, toned targets, the female in a bikini and the male without a shirt (see Figure 3A and Web Appendix F). Participants also wrote a paragraph describing how their body compared to the model in the advertisement. Control participants did not see either ad and as in study 2 described how to make a cup of tea. Coded responses confirmed successful feeling-unattractive/control manipulation.

Figure 3A: Stimuli used in Study 3



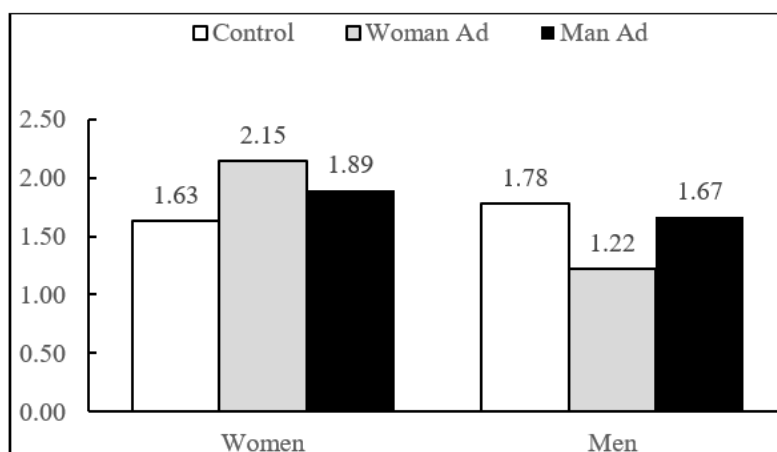
<sup>4</sup> Seventeen missing data-points.

We then thanked participants and directed them to a second, allegedly different, experiment, described as a test of their cognitive abilities. We used the same word search task as in study 2. Finally, participants provided their age and gender.

## Results and Discussion

We expect exposure to a female body-shaming ad to increase motivation to pursue the cognitive task among women, but not among men. A 2 (participant gender: male vs. female)  $\times$  3 (condition: control, man ad, and woman ad) ANOVA on number of attempted word-searches revealed an effect of gender ( $F(1, 275) = 4.075, p = .044$ ); as in study 2, women attempted more searches ( $M = 1.83, SD = 1.31$ ) than men ( $M = 1.62, SD = 1.32$ ). Importantly, a significant interaction emerged ( $F(1, 275) = 3.983, p = .020$ ). As we predicted, women exposed to a female body-shaming ad felt unattractive and exhibited higher motivation to pursue the cognitive task ( $M_{\text{woman-ad}} = 2.15, SD = 1.48$  vs.  $M_{\text{control}} = 1.63, SD = .27, t(275) = 1.861, p = .064$ ). To our surprise, among men, viewing the female ad (vs. not) decreased cognitive pursuits ( $M_{\text{woman-ad}} = 1.22, SD = 1.08$  vs.  $M_{\text{control}} = 1.78, SD = 1.42, t(275) = 2.144, p = .033$ ), possibly because they were distracted. As we expected, viewing a body-shaming ad featuring a male model (vs. control) did not affect motivation to pursue the cognitive task among women ( $M_{\text{man-ad}} = 1.89, SD = 1.12$  vs.  $M_{\text{control}} = 1.63, SD = 1.27$ ) or men ( $M_{\text{man-ad}} = 1.67, SD = 1.27$  vs.  $M_{\text{control}} = 1.78, SD = 1.41; ps > .388$ ; Figure 3B). In line with our theorizing, the man ad, unlike the woman ad, is less likely to make women feel unattractive, and therefore less likely to affect their cognitive pursuit.

Figure 3B: Cognitive Pursuits as a Function of Participant Gender and Feeling Unattractive



As in studies 1 and 2, we distinguished motivation from ability by looking at percentage of correctly found words of attempted words. No effect of gender, condition or their interaction emerged ( $M_{\text{women}} = 89.3\%$  vs.  $M_{\text{men}} = 89.9\%$  and  $M_{\text{woman-ad}} = 87.5\%$  vs.  $M_{\text{man-ad}} = 91.0\%$  vs.  $M_{\text{control}} = 89.9\%$ ,  $ps > .729$ ), suggesting feeling attractive affects motivation but not ability.

#### **Study 4: Attractiveness Increases Cognitive Pursuits among Children**

In study 4, we test the role of belief availability by studying a sample of preschool children (4-5 years old). Children at this age are less likely to hold a belief that attractive women are less intelligent. In fact, a large-scale longitudinal study by the National Child Development ( $n = 17,419$ ) reported a positive correlation between attractiveness and IQ for boys and girls (Kanazawa, 2011). Attractive children may be offered more opportunities and garner more compliments that motivate cognitive pursuits. Indeed, pretest 2 confirmed children associate attractiveness with intelligence. Thus, merely feeling attractive may instead motivate cognitive pursuits among them. We test this possibility in study 4.

#### **Method**

Sixty-one preschoolers (age range: 4-5 years, mean age = 61 months, SD = 4 months; 55% girls) participated at a preschool facility. All children had parental permission to participate. They interacted individually with an experimenter who was unaware of the research hypothesis.

We randomly assigned children either to a feeling-attractive or to a control condition. In both conditions, the experimenter first greeted a child individually. She then told children in the feeling-attractive condition, “Wow, look at you, how pretty/handsome you are today, wow!” Children in the control condition received this compliment at the end of the study, to ensure all children went away feeling they are attractive. All children then proceeded to a block-choice task—choosing between counting a 10-blocks or a 25-blocks pile (Web Appendix G). Counting 25 blocks is more difficult and reflects greater cognitive motivation. The experimenter (order counterbalanced), asked, “Do you want to show me how you count this pile or this pile?”

After choosing which pile to count, children indicated which pile was (a) larger and (b) easier to count. These measures are manipulation checks to ensure the children indeed perceived

the 25-block pile as larger and less easy to count. Children did not actually count the pile because of time constraints on participation.

## Results and Discussion

Children perceived the piles as intended: all but one said the 25-block pile was larger, and only nine children (4 from the attractive and 5 from the control condition) said counting 25 blocks is easier. This misunderstanding might have arisen because these children thought counting 25 blocks was also easy, so counting was easy for *them*.

As we predicted, the attractiveness manipulation affected choice, such that 53.6% of those in the feeling-attractive condition chose to count 25 blocks, compared to only 27.3% in the control condition,  $X^2(1, N = 61) = 4.390, p = .036$ . This difference arose also when excluding responses of the nine children who said counting 25 blocks was easier (feeling-attractive: 54.2%; control: 25.0%;  $X^2(1, N = 52) = 4.645, p = .031$ ). Including gender and the gender  $\times$  attractiveness interaction revealed no significant effects of gender or the interaction ( $ps > .564$ ).

Praising the children on their looks may have increased their motivation to choose the difficult task because they believe attractiveness and intelligence go together or they felt happy or they liked the experimenter more. Importantly, our goal was to show a reversal of the effect we documented for adult women in studies 1-2: children's motivation to work increases, when they feel attractive, while women's motivation decreases.

## General Discussion

Using everyday marketplace contexts—trying on clothes (study 1), thinking about selfies (study 2), viewing advertisements (study 3), and receiving compliments (study 4)—we show that feeling attractive differentially affects women's, men's, and preschoolers' cognitive pursuits. That feeling attractive adversely influences cognitive motivations of women but not children suggests attractiveness feelings cue beliefs that attractive women are not intelligent only when such beliefs are available, potentially after internalizing media portrayals. The finding that feeling attractive adversely impacts cognitive motivations of women (but not men) further suggests that accessible beliefs cued from feeling attractive impact cognitive motivations only when perceived as self-diagnostic.

To be clear, not all adults hold attractive-unintelligent beliefs to the same extent, or equally admit to holding them, or perceive them as equally self-diagnostic. But our data do establish, *on average* adults hold these beliefs more than not. Furthermore, *on average*, women's cognitive pursuits *are* impacted according to these beliefs, at least on verbal (female-stereotypic) tasks. That attractive people, especially men, are sometimes perceived as more competent, because they are more confident (Mobius and Rosendblat 2006), is not inconsistent with our finding that women, *when feeling attractive*, reduce cognitive pursuits because of beliefs we showed they on average hold. Future research could test alternative tasks or moderators, for instance, of importance of attractiveness to identity, or when attractiveness instead increases confidence.

Our research thus makes several important contributions. First, we add theoretical richness to research on gender differences (e.g., Eagly et al., 2012) by linking it to research on motivation. We demonstrate gendered beliefs impact cognitive motivation, and these beliefs may be automatically activated by how one is feeling in the moment and whether the belief is perceived to be self-diagnostic. That something as subtle but omnipresent as the fit of one's clothing, thinking about a selfie, or exposure to an advertising can influence cognitive pursuits based on age and gender makes this investigation especially important. While we do not provide process evidence through mediation, we do provide converging evidence through moderation, control measures, pretests, and triangulation. Future research could investigate these issues further, including investigating possible beliefs that might impair cognitive pursuits among men, or why children show a boost in cognitive pursuits when feeling attractive.

Also important is that we show these effects are motivation and not ability-based. Only a motivation-based account is in line with our theorizing that accessible beliefs impact cognitive pursuits via reduced motivation when these beliefs are perceived to be self-diagnostic. It would be unclear how belief accessibility could impact a person's ability to think, except via feeling more confident or in a good mood, but both these factors should increase and not decrease cognitive pursuits, as we instead find. Policy interventions could therefore be designed to boost motivation among women, for instance, showcasing mentors and role models.

Furthermore, the finding that feeling attractive can differentially influence motivation of women and children suggests a role of belief formation over time. These findings therefore have

implications for societal responsibility in not furthering stereotypes. Marketers may thus wish to consider more carefully the societal implications of their actions.

Finally, we add to the children-development literature that shows sexualization adversely impacts older children's cognitive performance, by instead showing feeling attractive is *different* and it *encourages* young children's cognitive pursuits. This result emphasizes the role of education and societal support encouraging children to fulfill their cognitive potential without sacrificing their looks. Presumably, as girls grow, they learn they cannot have it all—look good and work hard—leading, for example, to declining STEM enrollments. The responsibility is on adults to ensure children, girls and boys, continue to aspire to be successful in all aspects of life as they grow.

## REFERENCES

- Bigler, Rebecca S., and Lynn S. Liben (2006), "A Developmental Intergroup Theory of Social Stereotypes and Prejudice," *Advances in Child Development and Behavior*, Vol. 34, ed. Robert V. Kail, JAI, 39-89.
- Devine, Patricia G. (1989), "Stereotypes and Prejudice: Their Automatic and Controlled Components," *Journal of Personality and Social Psychology*, 56 (1), 5-18.
- Cesario, Joseph, Jason E. Plaks, E. Tory Higgins (2006), "Automatic Social Behavior as Motivated Preparation to Interact," *Journal of Personality and Social Psychology*, 90 (6), 893-910.
- Eagly, Alice H., Asia Eaton, Suzanna M. Rose, Stephanie Riger, and Maureen C. McHugh (2012), "Feminism and Psychology: Analysis of a Half-Century of Research on Women and Gender," *American Psychologist*, 67 (3), 211-230.
- Fitzsimons, Gavan J., and Baba Shiv (2001), "Nonconscious and Contaminative Effects of Hypothetical Questions on Subsequent Decision Making," *Journal of Consumer Research*, 28 (2), 224-238.
- Fishbach, Ayelet and Aparna A. Labroo (2007), "Be Better or Be Merry: How Mood Affects Self-Control," *Journal of Personality and Social Psychology*, 93 (2), 158.
- Fiske, Susan T., Amy J. C. Cuddy, and Peter Glick (2007), "Universal Dimensions of Social Cognition: Warmth and Competence," *Trends in Cognitive Sciences*, 11 (2), 77-83.
- Flavell, John H. (1963), "The Developmental Psychology of Jean Piaget," *The University Series in Psychology*.
- Folkes, Valerie S. (1988), "The Availability Heuristic and Perceived Risk," *Journal of Consumer Research*, 15 (1), 13-23.
- Gilbert, Daniel T. (1991), "How Mental Systems Believe," *American Psychologist*, 46, 107-119.
- Gill, Rosalind (2007), *Gender and the Media*, Cambridge, MA: Polity Press.
- Ginsburg, Herbert P. and Sylvia Opper (1988), *Piaget's Theory of Intellectual Development*, Englewood Cliffs, NJ: Prentice-Hall.
- Hansen, Katherine, Margaret Gerbasi, Alexander Todorov, Elliott Kruse, and Emily Pronin (2014), "People Claim Objectivity After Knowingly Using Biased Strategies," *Personality and Social Psychology Bulletin*, 40 (6), 691-699.
- Heilman, Madeline E., Aaron S. Wallen, Daniella Fuchs, and Melinda M. Tamkins (2004),



- “Penalties for Success: Reactions to Women Who Succeed at Male Gender-Typed Tasks,” *Journal of Applied Psychology*, 89 (3), 416-427.
- Higgins, E. Tory (1989), “Self-Discrepancy Theory: What Patterns of Self-Beliefs Cause People to Suffer?,” in *Advances in Experimental and Social Psychology*, Vol. 22, Leonard Berkowitz, New York City, NY: Academic Press, 93-136.
- Inhelder, Bärbel, and Jean Piaget. *The psychology of the child*. New York: Basic Books, 1969.
- Job, Veronika, Carol S. Dweck, and Gregory M. Walton (2010), “Ego Depletion—Is It All in Your Head? Implicit Theories About Willpower Affect Self-Regulation,” *Psychological Science*, 21 (11), 1686-1693.
- Kanazawa, Satoshi (2011), “Intelligence and Physical Attractiveness,” *Intelligence*, 39 (1), 7-14.
- McKenney, Sarah J. and Rebecca S. Bigler (2014), “High Heels, Low Grades: Internalized Sexualization and Academic Orientation among Adolescent Girls,” *Journal of Research on Adolescence*, 26 (1), 30-36.
- McKenney, Sarah J. and Rebecca S. Bigler (2016), “Internalized Sexualization and Its Relation to Sexualized Appearance, Body Surveillance, and Body Shame among Early Adolescent Girls,” *The Journal of Early Adolescence*, 36 (2), 171-197.
- Menon, Geeta, Priya and Raghubir, and Norbert Schwarz (1995), “Behavioral Frequency Judgments: An Accessibility-Diagnosticity Framework,” *Journal of Consumer Research*, 22 (2), 212-228.
- Mobius, Markus M. and Tanya S. Rosenblat (2006), “Why beauty matters,” *American Economic Review*, 96 (1), 222-235.
- Peracchio, Laura A. (1992), “How Do Young Children Learn to Be Consumers? A Script-Processing Approach,” *Journal of Consumer Research*, 18 (4), 425-440.
- Serbin, Lisa A., Diane Poulin-Dubois, Karen A. Colburne, Maya G. Sen, and Julie A. Eichstedt (2001), “Gender Stereotyping in Infancy: Visual Preferences for and Knowledge of Gender-Stereotyped Toys in the Second Year,” *International Journal of Behavioral Development*, 25 (1), 7-15.
- Stone, Ellen A., Christia S. Brown, and Jennifer A. Jewell (2015), “The Sexualized Girl: A Within-Gender Stereotype among Elementary School Children,” *Child Development*, 86 (5), 1604-1622.
- Srull, Thomas K. and Robert S. Wyer (1979), “The Role of Category Accessibility in the

Interpretation of Information about Persons: Some Determinants and Implications,”  
*Journal of Personality and Social Psychology*, 37 (10), 1660-1672.

## Web Appendix A: Pretest 1

This study tests adults' beliefs regarding the association between intelligence and attractiveness, and whether these beliefs are gendered. We predicted that adults would think that attractive women (but not men) are less intelligent.

### Method

Two hundred seventy-eight<sup>5</sup> undergraduate students from a south-west university (49.6% women) participated in a series of studies in return for course credit. In the focal study, we first asked them to rate their level of agreement with two statements: "I think in general, other people often assume that attractive women are less intelligent," and next we asked the same question about men, both on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Second, on the following page we asked them "I think in general, other people often assume that for women it is more important to be: 1 = attractive, 7 = intelligent", and then the same question for men. We added the phrase "I think in general, other people often assume that..." to all questions to reduce social desirability concerns. At the end of the session, participants reported their gender.

### Results and Discussion

A 2 (participant gender: male vs. female)  $\times$  2 (target of belief: men vs. women) repeated-measures ANOVA on strengths of beliefs revealed significant effect of belief target ( $F(1, 272) = 68.650, p < .001$ ): the belief that attractive women are less intelligent was endorsed more strongly than the belief that attractive men are less intelligent ( $M_{\text{target=women}} = 4.49, SD = 1.57$  vs.  $M_{\text{target=men}} = 3.78, SD = 1.53$ ). We also find marginally significant effect of participant's gender ( $F(1, 272) = 3.750, p = .054$ ), qualified by an interaction between participant's gender and belief target ( $F(1, 272) = 30.258, p < .001$ ). Women (vs. men) endorsed more strongly the belief that attractive women are less intelligent ( $M_{\text{women}} = 4.88, SD = 1.46$  vs.  $M_{\text{men}} = 4.09, SD = 1.57; F(1, 272) = 18.432, p < .001$ ), suggesting this belief may be more accessible and more diagnostic to women. The belief that attractive men are less intelligent was endorsed equally by both genders ( $M_{\text{women}} = 3.70, SD = 1.45$  vs.  $M_{\text{men}} = 3.86, SD = 1.60; p > .398$ ).

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<sup>5</sup> Four participants did not report their gender, resulting in a sample of 274.

Similarly, a 2 (participant gender: male vs. female)  $\times$  2 (belief applicability: men vs. women) repeated-measures ANOVA with gender as the between factor and belief applicability (“for women, more important to be attractive or intelligent” and “for men, more important to be attractive or intelligent”) as the within factor showed a main effect of belief applicability ( $F(1, 271) = 167.058, p < .001$ ); adults think that it is more important for women (vs. men) to be attractive than intelligent ( $M_{\text{women}} = 5.26, SD = 1.46, M_{\text{men}} = 3.76, SD = 1.51$ ; numbers are reverse coded, such that higher numbers reflect endorsement that attractiveness is more important and lower numbers reflect endorsement that intelligence is more important). The interaction was also significant ( $F(1, 271) = 7.809, p = .006$ ), such that both genders equally believed that it was important for women to be attractive rather than intelligent ( $M_{\text{women}} = 5.37, SD = 1.43$  vs.  $M_{\text{men}} = 5.15, SD = 1.48; p > .210$ ), but men endorsed more strongly than women the belief that it was important for men to be attractive rather than intelligent ( $M_{\text{men}} = 3.97, SD = 1.39$  vs.  $M_{\text{women}} = 3.54, SD = 1.61; F(1, 271) = 5.506, p = .020$ ).

## Web Appendix B: Pretest 2

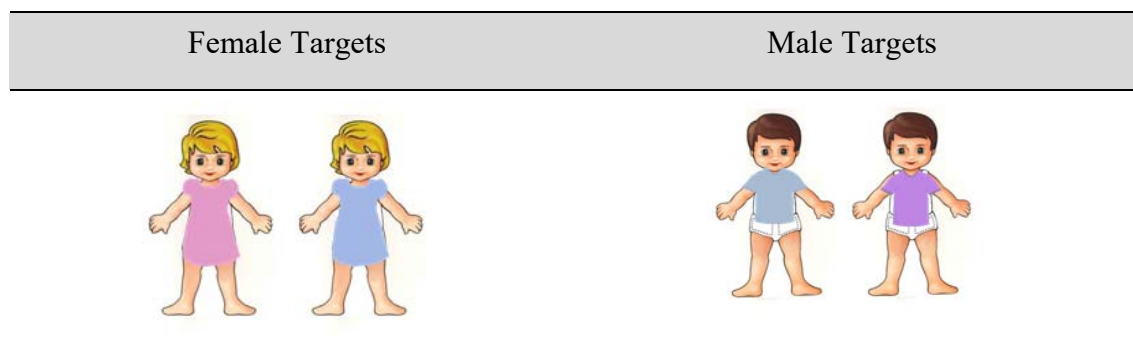
This pretest investigates children's beliefs regarding the association between intelligence and attractiveness, and whether these beliefs are gendered. We predicted that children would think that attractive men and women are also more intelligent.

### Method

Forty-one children (age range: 4-5 years; 44% girls) participated at a preschool facility. All children had parental permission to participate and interacted individually with an experimenter who was unaware of the research hypothesis.

Preschoolers completed two trials: one in which the experimenter showed them pictures of a pair of female targets, and another in which the experimenter showed them pictures of a pair of male targets (see Figure B1). In each trial, the children indicated which of the two targets looks nicer. This served as our measure of attractiveness. 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). This served as our measure of intelligence. We counterbalanced whether the child first saw the male targets or the female targets.

Figure B1: Girl and Boy Target Stimuli, Dresses, and Shirts Used in Pretest



We chose this activity because it is familiar to young children, and when conducting research with young children, age-appropriate activities are important (Peracchio, 1992). We also deliberately chose a pink dress and a blue dress for the girl models because these colors tend to be associated more with girls versus boys, respectively. Based on our theorizing, we predicted

we would find a positive correlation between attractiveness of the model and intelligence. That is, we tested for the association between being attractive and being intelligent, and not a possible confounding effect of being seen more as girl-like or boy-like (based on stereotypic clothing colors) on perceived intelligence. The child then proceeded to a different experiment and completed some tasks unrelated to this study. The child then received a small thank-you gift for participating, and returned to his or her classroom.

### **Results and Discussion**

To test whether children associate attractiveness positively with intelligence, we coded each response as “1” if the child judged the target knowing the ABCs also as more attractive, and “0” otherwise. Overall, children indicated that the nicer target also knew his or her ABCs. Specifically, 68% of the children indicated the more attractive female target also knew her ABCs, which was different from chance (50%),  $X^2 = 5.48, p = .019$ , one-tailed. Similarly, 63% of the children also said the nicer male target knew his ABC, which was marginally different from chance ( $X^2 = 2.95, p = .086$ , one-tailed). We found no participant-gender or question-order effects, nor did color of dress /shirt correlate with perceived intelligence of the model.

This study thus provides initial evidence that preschoolers positively associate attractiveness with intelligence, regardless of whether the target of belief is female or male and whether the person expressing the belief is a girl or boy.

### Web Appendix C: Methodological Details, Study 1

#### (a) Sweatshirt manipulation



Note: These are pictures of a research assistant trying on a sweatshirt in the more-attractive and less-attractive conditions; no pictures of participants were taken during the study.

#### (b) Anagrams task

Rearrange the scrambled letters to form a word

<b>IKCTS</b>	_____
<b>NELMO</b>	_____
<b>ANETLM</b>	_____
<b>OLSPO</b>	_____
<b>LEESTC</b>	_____
<b>NIEDM</b>	_____
<b>IDFEL</b>	_____
<b>VEERL</b>	_____

*Solutions: STICK, LEMON, MANTEL, POOLS, SELECT, DENIM, FIELD, REVEL*

## (c) Control measures

I feel confident

1 = not at all      2      3      4      5      6      7 = very much

I feel bad

1 = not at all      2      3      4      5      6      7 = very much

I feel good

1 = not at all      2      3      4      5      6      7 = very much

## (d) Sweatshirt evaluation questions for cover study:

The sweatshirt is:

1 = poor quality      2      3      4      5      6      7 = high quality

1 = uncomfortable      2      3      4      5      6      7 = comfortable

1 = low fit      2      3      4      5      6      7 = high fit

1 = unattractive      2      3      4      5      6      7 = attractive

1 = not warm      2      3      4      5      6      7 = very warm

1 = cheap      2      3      4      5      6      7 = expensive

1 = not eye-catching      2      3      4      5      6      7 = very eye-catching

1 = not comfortable wearing      2      3      4      5      6      7 = comfortable wearing

1 = not likely to buy      2      3      4      5      6      7 = very likely to pay

1 = not likely to pay      2      3      4      5      6      7 = very likely to pay

There were no differences between conditions on sweatshirt evaluation measures ( $ps > .113$ ), except for warm ( $M_{\text{more-attractive}} = 5.08$   $SD = 0.95$ ,  $M_{\text{less-attractive}} = 4.29$   $SD = 1.30$ ,  $t(46) = 2.00$ ,  $p = .051$ ) and expensive ( $M_{\text{more-attractive}} = 4.69$   $SD = 0.75$ ,  $M_{\text{less-attractive}} = 4.11$   $SD = 1.13$ ,  $t(46) = 1.70$ ,  $p = .096$ ). Neither of these measures predicted number of words attempted or percent solved correctly ( $p > .40$ ).



**Web Appendix D: Data Exclusion Notes, Studies 1-3**

Study 1: Data of two participants was discarded because the assistant failed to record their sweatshirt size.

Study 2: Twelve participants did not indicate their gender and two participants did not complete the manipulation thus could not be included in the analysis, resulting in a sample of 598 participants.

Study 3: Seventeen participants did not provide their gender and are thus their data could not be included for analysis, resulting in a sample of 281 for all analysis.

**Web Appendix E: Methodological Details, Study 2****(a) Control condition**

**Making a Cup of Tea**

This study is about how people do everyday things. Please imagine you are making a cup of tea.

Please describe the process of making a cup of tea.

**(b) Attractive condition**

**Taking Pictures of Yourself**

This study is about the kinds of picture people take of themselves. To begin, we would like you to think about an attractive picture of yourself.

**You do not need to upload the picture.**

Please tell us what the picture shows.

How attractive do you think the picture is and how you look in the picture?

Importantly, how do you feel about yourself when you take such attractive pictures of yourself?

**(C) Cognitive test**

**COGNITIVE TEST**

Please find as many words as you can (out of 14) in the grid below. The words are hidden in the grid, running in one of eight possible directions horizontally, vertically, or diagonally.

You have 2 minutes to complete this test and then you will be automatically moved to the next study.

You can choose not to work on it at all, or work as little as you like. After two minutes you will automatically advance to the next study.

**Summer Vacation**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	O	E	Y	S	M	A	T	T	N	W	N	S	A	R	B
2	C	Q	G	X	W	J	G	D	E	O	T	I	Y	E	V
3	E	V	C	A	A	I	C	R	I	V	R	N	A	M	A
4	A	Y	E	O	G	A	M	T	P	P	Z	C	B	M	C
5	N	V	N	V	D	G	A	M	L	D	H	C	L	U	A
6	H	T	A	O	B	N	A	A	I	L	H	B	S	S	T
7	Z	I	U	E	I	P	N	B	E	N	R	Z	C	M	I
8	K	U	K	T	Q	E	B	V	D	L	G	S	B	V	O
9	N	E	S	I	E	M	A	D	A	O	N	Q	A	N	N
10	E	E	E	C	N	R	J	R	W	M	U	S	E	U	M
11	D	P	L	X	T	G	Y	H	S	D	J	Z	G	E	M
12	Z	F	R	F	I	W	T	C	V	E	Q	Z	N	H	C
13	S	K	K	J	E	M	C	Z	O	T	L	Q	U	W	X
14	A	L	S	E	X	C	U	R	S	I	O	N	D	J	R
15	E	R	I	F	P	M	A	C	L	A	Y	M	O	F	X

Please enter the location of the first letter for each of these words. For example, word OCEAN starts on 1st row 1st column. You enter: 1-1

OCEAN	<input type="text"/>
AIRPLANE	<input type="text"/>
BAGGAGE	<input type="text"/>
BEACH	<input type="text"/>
BOAT	<input type="text"/>
CAMPFIRE	<input type="text"/>
DESTINATION	<input type="text"/>
EXCURSION	<input type="text"/>
HIKING	<input type="text"/>
MUSEUM	<input type="text"/>
SUMMER	<input type="text"/>
SWIMMING	<input type="text"/>
TRAVEL	<input type="text"/>
VACATION	<input type="text"/>

*Solutions:*

(Over, Down, Direction)

Airplane (13, 1, SW)

Baggage (8, 7, NW)

Beach (15, 1, SW)

Boat (5, 6, W)

Campfire (8, 15, W)

Destination (1, 11, NE)

Excursion (4, 14, E)

Hiking (1, 6, SE)

Museum (10, 10, E)

Ocean (1, 1, S)

Summer (14, 6, N)

Swimming (4, 1, SE)

Travel (5, 11, NE)

Vacation (15, 2, S)

**Web Appendix F: Methodological Details, Study 3**

(a) Control condition

Please use the space below to describe how to make a cup of tea.

(b) Unattractive woman and man ad condition

Please look at the advertisement below and answer few questions about it:



or



(d) Analysis of advertisement evaluation questions:

Participants in the feeling-unattractive condition were asked to rate the ad on how it relates to them (1-7 scale, “I identify with this ad,” “This ad relates to me,”  $r = .92$ ) and how much they like the ad (1-7 scale, like, enjoy, good ad;  $\alpha = .93$ ). On the relatedness measure, we only find main effect of gender ( $F(1, 139) = 9.889, p = .002$ ), such that women rated ads featuring attractive models as less relatable to them than men ( $M = 2.36, SD = 1.69$  vs.  $M = 3.25,$

Please elaborate on the following questions.  
 Describe how does the ad make you feel about your body?  
 How does your body compare to the body of the model in the ad?  
 Is your body perfect?

SD = 1.69). On the advertisement liking measure, we find again main effect of gender ( $F(1,139) = 8.301, p = .005$ ) that mirrors the relatedness measure, such that women liked the ads less than men ( $M = 3.49, SD = 1.74$  vs.  $M = 4.24, SD = 1.62$ ). We further find an interaction effect ( $F(1,139) = 10.813, p = .001$ ), such that among women there was no difference in judgments of ad liking of two types of ads ( $M = 3.26, SD = 1.75$  vs.  $M = 3.78, SD = 1.73, p > .30$ ), but men rated the female ad more favorably than the male ad ( $M = 4.95, SD = 1.57$  vs.  $M = 3.66, SD = 1.43, t(81) = 3.87, p < .001$ ).

**Web Appendix G: Block Piles Used in Study 4**

Small pile (10 blocks)



Large pile (25 blocks)

