

CAUSES AND CONSEQUENCES OF BIASED PERCEPTION
OF TRANSGENDER INDIVIDUALS

By

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ABSTRACT OF THE DISSERTATION

Causes and Consequences of Biased Perception of Transgender Individuals

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In nine studies, my dissertation explored perceptual and attentional routes to transgender discrimination. Specifically, I explored whether, when, and why people's perceptions of an individual's gender-typicality differ when they learn the person is transgender versus non-transgender (cisgender). My dissertation had four primary aims. First, I sought to establish *whether* biases exist in the way people perceive transgender individuals. In Studies 1a, 1b, 2, and 3 I tested whether participants perceive a target differently upon learning they are transgender versus cisgender. Across studies, participants perceived a target labeled as transgender as less gender-congruent than the same target labeled as cisgender. Second, I tested *why* such differences might emerge. In Study 4, I tested whether selective attention to gender-incongruent features plays a role in biased perception. Upon learning a woman was transgender, participants attended to prototypically masculine regions of her body, which was associated with perceiving her as less feminine. Third, I explored *when* perceptual biases might be most likely to emerge. In Studies 5a and 5b, I examined target race as a moderator of perceptual biases. Differences in perceptions of gender-typicality emerged between targets labeled transgender versus cisgender for both Black and White targets; however, contrary to

hypotheses, differences in perceptions of gender-typicality were not exaggerated toward Black transwomen. Fourth, I tested downstream negative consequences of such biases. In Study 6, perceptions of transwomen as less gender-congruent (i.e., less feminine) led to beliefs that it was less acceptable for them to behave in feminine ways and less endorsement that the target should be categorized as female. In Study 7, people behaved more aggressively toward transgender versus cisgender women. However, perceptions of transwomen as less gender-congruent did not mediate this relationship. By demonstrating that people see transgender individuals as less gender-typical, this work suggests perceptual biases may be one hurdle transgender individuals face in being recognized according to their expressed identities.

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Introduction

“When you misgender me, you tell me many things. You tell me that you know who I am better than I know myself...You tell me you have scrutinized my physical appearance, made invasive extrapolations, and sorted me without my consent into a category based on your conclusions”

– Joli St. Patrick, *What You’re Really Saying When You Misgender*

In 2015, Caitlyn Jenner publicly identified as transgender and famously appeared on the cover of *Vanity Fair*. Although she implored “Call me Caitlyn,” many individuals continued to refer to her as man. Further, comments on Caitlyn’s masculine physique suggested some individuals not only thought about Caitlyn as a man but *visually perceived* her as masculine as well. In the present dissertation, I asked whether knowing someone identifies as transgender affects the way individuals see them. I suggest people who learn an individual is transgender see them as less gender-typical than people who do not. Moreover, I examined antecedents (i.e., selective attention), consequences (i.e., gender classification and aggression), and moderators (i.e., target differences) of these perceptual biases to develop a conceptual model of the antecedents and consequences of perceiving transgender individuals as less like their expressed gender (Figure 1). Across studies, I suggest these perceptual distortions may contribute to bias toward transgender people.

Transgender Prejudice and Discrimination

Approximately 1.4 million adults in the United States identify as transgender (Flores, Herman, Gates, & Brown, 2016). The transgender community faces tremendous stigmatization and marginalization (Norton & Herek, 2013). Transgender individuals report being victims of verbal harassment, stalking, economic and institutional discrimination, and physical and sexual assault (Hughto, Reisner, & Pachankis, 2015;

James et al., 2016; Lombardi, Wilchins, Priesing, & Malouf, 2002). Nearly 60% of one sample of transgender people reported experiencing violence or harassment because of their gender identification, and approximately a third reported having attempted suicide (Clements-Nolle, Marx, & Katz, 2006). Moreover, public policies designed to protect and support transgender individuals—ranging from school to healthcare to identification issues—have notoriously been difficult to implement due to pervasive anti-transgender attitudes (Taylor, 2007). Bias and discrimination against transgender individuals can lead to deleterious consequences for members of the transgender community.

Despite decades of work from social psychologists seeking to better understand and prevent negative attitudes toward stigmatized groups (e.g., Allport, 1954; Crocker & Major, 1989; Lai, Haidt, & Nosek, 2014), factors that predict anti-transgender attitudes remain underexplored. Some work suggests anti-transgender attitudes are related to social and personality factors, including greater endorsement of traditional gender roles and stronger social dominance orientation (Makwana et al., 2017; Norton & Herek, 2013; Tebbe & Moradi, 2012). Additionally, a high need for closure—a preference for order and structure over ambiguity—has been found to predict greater anti-transgender attitudes (Callahan & Zukowski, 2017; Makwana et al., 2017; Tebbe & Moradi, 2012). Other work suggests transgender individuals experience bigotry because people are uncomfortable with gender non-conformity (Miller & Grollman, 2015; Stern & Rule, 2017). Indeed, “incongruent” transgender faces (i.e., masculine male-to-female faces or feminine female-to-male faces) were evaluated more negatively than congruent transgender faces (Gerhardstein & Anderson, 2010). Further, people reported feeling less comfortable with masculine-appearing transgender women utilizing female gendered

spaces (e.g., restrooms, sororities) compared to feminine-appearing transgender women (White & Jenkins, 2017). Though past work has identified characteristics about both perceivers and transgender individuals that are associated with attitudes toward and evaluations of transgender individuals, there is a dearth of research examining the underlying processes through which discrimination occurs. In the present work, I suggest knowing someone is transgender affects the way people perceive and attend to the individual which contributes to bias and discrimination toward them.

Theoretical Framework of Motivated Perception

The idea that people's visual experiences may not simply be a mirrored representation of their actual environment first empirically emerged during the mid-20th century with the "New Look" era of perception. This era of psychology focused on examining the susceptibility of perception to top-down perceiver effects. Controversially, this framework suggested that internal characteristics of perceivers can shape visual perception (Bruner & Goodman, 1947; Bruner & Postman, 1947a, 1947b). New Look researchers proposed that perceivers unknowingly manipulate visual data according to their expectations, knowledge, values, and desires (Bruner & Goodman, 1947; Bruner, 1957). According to the New Look framework, what individuals see is not always an accurate representation of the world around them; rather perception is susceptible to a variety of factors.

Although the New Look perspective inspired hundreds of studies, it also faced significant criticism (e.g., Eriksen & Brown, 1956; Goldiamond, 1958; Prentice, 1958). Much of this criticism was based on the methodological and theoretical limitations of the time. For example, many of the methods available to New Look researchers in the 1940s

made them unable to separate perceptual claims from alternate possibilities such as response bias, reporting issues, and expectancy accounts (Erdelyi, 1974, 1985). However, modern technological and theoretical advances have allowed the study of top-down processes and perception to receive renewed empirical attention (Cole, 2014).

Indeed, a new era of research once again suggests perceivers' states can influence visual processes (Li & Warren, 2004; Long & Toppino, 2004). The most often studied avenue of this modern work, termed "motivated perception," suggests motivational factors can influence visual experiences, such as representations of the distance to or size of a target (Balcetis & Dunning, 2006; see Dunning & Balcetis, 2013 for a recent review). These early contemporary findings inspired later work suggesting motivational factors can influence social visual processes as well (Adams, Ambady, Nakayama, & Shimojo, 2010; Balcetis & Lassiter, 2010; Freeman & Johnson, 2010). For example, motivations to protect one's romantic relationship led to perceiving attractive singles as less attractive (Cole, Trope, & Balcetis, 2016). Despite empirically falling by the wayside for many years, the influence of top-down processes on perception has received renewed scientific attention in recent times.

However, it is important to note that as in the original New Look era, there is again debate on whether perception is penetrable by top-down factors like motivation (see Firestone & Scholl, 2016 and 34 commentary responses for varying viewpoints). For example, some researchers suggest that motivation does not change the way people actually *see* a target, but rather simply changes the way people judge or *evaluate* it (e.g., Firestone & Scholl, 2016). However, researchers have used methods from psychophysics (i.e., configural face processing; Michel, Corneille, & Rossion, 2007; Michel, Rossion,

Han, Chung, & Caldara, 2006) and neuroscience (i.e., fMRI; Golby, Gabrieli, Chiao, & Eberhardt, 2001) to provide evidence for top-down effects of group membership on face perception (Kawakami, Amodio, & Hugenberg, 2017). While the debate about the malleability of perception due to top-down effects is by no means resolved, modern researchers have the capability to address some of the pitfalls that make top-down claims difficult to assert (see Discussion for more on this).

Person Perception and Categorization

Although much of the contemporary motivated perception work has focused on perception of objects or perceivers' environments (Balcetis & Dunning, 2006; Balcetis & Dunning, 2010; Cole, Balcetis, & Zhang, 2013; Radel & Clement-Guillotin, 2012), a growing body of work has explored how people perceive other people (Freeman, Rule, Adams, & Ambady, 2010). This work suggests people's motivations, expectations, physical states, and emotions can shape their perceptions of others. For example, when individuals felt threatened by a man, he appeared physically closer than when they did not (Cole, Balcetis, & Dunning, 2012) and stereotypes about young Black men as dangerous and aggressive made them appear bigger and stronger than young White men (Wilson, Hugenberg, & Rule, 2017). Perceptions of others can be shaped by characteristics of perceivers themselves.

Categorization influences perception. Learning category-level information about another person can influence the way an individual sees them. Indeed, early visual processing of faces can be shaped by group membership information (Bernstein & Davis, 1982; Ratner & Amodio, 2013). For example, when racially ambiguous individuals were labeled as Black, their skin tone was represented as darker (Levin & Banaji, 2006). In

another study, participants represented targets labeled as welfare recipients as more prototypically African American compared with non-welfare-recipients (Brown-Iannuzzi, Dotsch, Cooley, & Payne, 2017). Some prior work has established that category-level information about an individual can lead to biased visual processing. Because visual perception drives categorization and categorization has important downstream implications, understanding how people perceive transgender individuals is important for understanding the roots of bias and discrimination.

Some recent work has begun to touch on these issues. For example, some work has explored people's memory for and evaluations of transgender targets (Wittlin, Dovidio, LaFrance, & Burke, 2018). People shown an image of a face labeled transgender expected, evaluated, and remembered the face as less gender-congruent than people who saw the same face labeled cisgender. In the present studies, we extend past work to suggest people may also *perceive* individuals as less gender-congruent when they learn they are transgender, and we link these perceptual biases to important social categorization outcomes with policy implications.

Exploring social psychological questions from a motivated perception perspective can provide insight into how perceptual processes may contribute to prejudice and discrimination. Studying perception is important because people put extraordinary faith in their visual experiences, often above other forms of information (Andrade, 2011). This faith in the visual system is what scholars call naïve realism (Ross & Ward, 1995, 1996), a philosophical view that suggests people believe their sensory experiences accurately correspond to the world as it really is (see Lehar, 2004 for discussion). Such a belief leads people to be confident in their visual experiences and unlikely to discount them. The way

people see the world—or think they see the world—serves as input for their later cognitions and behavioral decisions. As a result, studying perceptual representations may help capture indirect and implicit processes that guide people’s decisions.

In this dissertation, I will use the term “perception” to describe the organization and interpretation of sensory information to represent the environment (Schacter, Gilbert, & Wegner, 2011) and will include perception of both direct physically present stimuli and the mental representation that occurs without direct input (Baum & Jonides, 1979; Xiao, Coppin, & Van Bavel, 2016).

Perception influences social categorizations. After they perceive others, people often make social categorizations about them. Social categorization based on perceptual information – particularly for well-practiced categories such as sex, race, and age – occurs quickly, on the magnitude of milliseconds (Amodio & Bartholow, 2011). Further, these categorizations can occur spontaneously and without intention. For example, face inversion, blurring, and rapid presentation have little effect on sex categorizations (Cloutier, Mason, & Macrae, 2005; Macrae, Quinn, Mason, & Quadflieg, 2005). Basic social categorizations occur even when faces are presented subliminally (Bargh, Chen, & Burrows, 1996; Chen & Bargh, 1997; Macrae & Martin, 2007). Moreover, how people categorize others can have important implications for how they behave towards them. For example, in one study categorizing a mixed-race face as Black instead of White led people to allocate less economic resources to the individual (Krosch & Amodio, 2014). Social categorization occurs quickly and has implications for social evaluations and interactions.

Small changes in perceptual cues can lead to dramatic categorization differences. For example, individuals with slightly more Afrocentric features are more likely to be categorized as Black (Dunham, Stepanova, Dotsch, & Todorov, 2015; Krosch & Amodio, 2014; MacLin & Malpass, 2001; Stepanova & Strube, 2012a, 2012b). Further, perceivers are reliably able to categorize individuals into groups with somewhat ambiguous signals of category membership. Perceivers are, above chance, able to correctly categorize sexual orientation based on faces (Rule, Ambady, Adams, & Macrae, 2007; Rule, Ambady, & Hallett, 2009). Similarly, individuals use subtle facial cues to correctly categorize faces into religious groups (Rule, Garrett, & Ambady, 2010a, 2010b). Although these more “concealable” identity categorizations are imperfect and a matter of some debate (Cox, Devine, Bischmann, & Hyde, 2016), there is ample evidence that individuals use perceptual cues to categorize other people.

The process of social categorization is well explored in the social psychological literature (Billig & Tajfel, 1973; Tajfel, Billig, Bundy, & Flament, 1971; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). However, limited work to date has explored the relationship between perceptual processes, categorization, and discrimination toward the transgender population. In the present work, I suggest discrimination towards transgender individuals may stem from whether people perceive, and ultimately categorize, them as more or less like their gender identity.

Overview of the Present Work

In the first part of this dissertation, I used novel visual paradigms to test whether learning an individual is transgender leads individuals to perceptually represent them as less gender-congruent—i.e., perceive a transwoman as less feminine and a transman as

less masculine—than their cisgender counterparts (see Part 1, pg. 11). I predicted that individuals labeled transgender would be perceived as less gender-typical than the same individuals without the transgender label.

I next explored antecedents and consequences of perceiving transgender individuals as less gender-typical. To test these questions, I specifically focused on transgender women because they are more often targets of aggression and discrimination (James et al., 2016). Further, I used only men as participants as prior work suggests this group exhibits the most negative attitudes toward transgender individuals (Nagoshi et al., 2008; Norton & Herek, 2013). Past work suggests that, under some contexts, LGB individuals may feel threatened by transgender identities and evaluate transgender individuals as more negative than heterosexual individuals (Morrison, 2010). As such, only heterosexual participants were included in the present work.

To explore antecedents, I tested whether biased attention contributes to biased perception. Specifically, I tested whether perceptions of transgender women as less feminine are the result of biased attention to more masculine areas of the body (see Part 2, pg. 24). To explore moderators, I tested characteristics of targets that may produce exaggerated perceptual biases (see Part 3, pg. 45). I predicted that Black transgender women would be perceived as even less gender-typical than White transgender women due to compounded perceptual biases that come from both their transgender status and race-based biases that link Black individuals with masculinity. In Part 4 (pg. 57), I tested consequences of biased perceptions. Specifically, I predicted that perceiving transwomen as less gender-typical would lead to lower acceptability of feminine behavior, less

endorsement that the target should be categorized as female, and high levels of aggression toward her.

All photographs used in the follow studies were of actual transgender individuals that individuals posted of themselves on transgender blogs and websites¹. Using photographs of transgender-identified individuals – rather than cisgender individuals labeled as transgender – increases the ecological validity of the findings. Biases, perceptual or discriminatory, exhibited toward these targets reflects real-world effects that they may be subject to in their actual lives.

Materials for all studies are available at:

https://osf.io/a5jve/?view_only=7d64917abebf4a00a7da5dd3e998fb08.

¹ Except for targets used in Study 5b.

**Part 1: Are individuals described as transgender perceived differently than
the same individuals described as cisgender?**

Past work suggests a relationship between category labels and visual processing (e.g., Levin & Banaji, 2006; Ratner & Amodio, 2013). In Part 1 of this dissertation, I tested whether the category label of “transgender” was associated with perceptions of gender-incongruency. In Study 1a, I tested whether people who learned a woman identifies as transgender would generate an avatar to represent her that is less prototypically feminine than people who did not learn the woman identified as transgender. In Study 1b, using the same methodology as Study 1a, I tested whether people would create less prototypically masculine avatars to represent a man identified as transgender compared to the same man without the transgender label. Further, in Study 1b I tested whether perceptual biases are equally likely to emerge for male and female perceivers. I had no *a priori* predictions about the role of perceiver gender. In Study 2, I sought to replicate the effects of Studies 1a and 1b using a different paradigm. Participants in Study 2 learned a target identifies as transgender or not and then completed a visual matching task to identify the target’s true face out of an array. Finally, in Study 3, I included a full experimental design and examined perceptions of gender-typicality toward both transgender men and women with both men and women as perceivers. Across studies I predicted that individuals would perceive a target labeled as transgender as less gender-congruent than the same target without the transgender label.

Study 1a

In Study 1a, I explored how people perceptually represent a woman who identifies as transgender. Some participants learned the woman was transgender while others did not. Participants created an avatar to represent her. A separate sample then rated the avatars for how feminine they appeared. I hypothesized participants who knew the target was transgender would create less feminine avatars than participants who did not.

Method

In exchange for course credit, 104 undergraduate students participated in a study about impression formation². As this was a previously unexplored effect with no effect sizes on which to base a power analysis, I aimed to recruit 50 participants per cell of the experimental design, the recommended minimum sample size needed when effect sizes are unknown (Simmons, Nelson, & Simonsohn, 2013).

All participants viewed an ostensible dating profile that included a photograph of a White transwoman (i.e., an individual categorized as a man at birth who identifies and presents as a woman). The profile contained generic information (e.g., that the individual describes herself as friendly and has a dog) as well as the experimental manipulation (Appendix A). Half ($n = 52$) of participants read that the target is a transwoman who volunteers with a transgender organization (*transgender condition*). The other half of participants ($n = 52$) read that the target is adopted and volunteers with an adoption organization (*control condition*). Adoption served as the control condition because it is

² I did not collect demographic information in this study. The typical demographics of our undergraduate samples are 59.9% female, $M_{age} = 19.06$, $SD_{age} = 1.47$, 30.8% White, 8.3% Black, 11.1% Hispanic/Latino, 38.6% Asian, and 11.2% Other (i.e., Multiracial/Biracial, Other, American Indian or Alaskan Native, Middle Eastern/North African, Pacific Islander).

disclosive but is evaluatively neutral and does not reveal gender information. Pre-testing revealed that when given no gender information the target was categorized as female. All 48 participants in the pre-test sample identified the target as “female” rather than “male” or “other”.

Participants then created an avatar of the target using The Sims™ computer game (see Figure 2 for example avatars). Participants first viewed a short video demo where they learned they could manipulate nearly every aspect of the avatar they created, including their facial features, hairstyles, clothing, builds, and walks. Participants were incentivized to recreate the target accurately; the experimenter told participants they would receive a \$25 prize if their avatar was rated most like the woman in the picture. Participants had a photograph of the target in front of them to reference and had unlimited time to create the avatar. At the end of the study, participants were thanked and debriefed.

I recruited a separate sample of Amazon Mechanical Turk workers ($N = 220$, $M_{\text{age}} = 38.54$, 68.2% women; 79.1% White, 7.3% Black, 4.5% Hispanic, 4.1% Asian, 5% Other) to evaluate the avatars. Sensitivity power analyses suggest this sample is sufficient to detect a minimum effect size of $d = .19$ for a within-subjects design. Amazon Mechanical Turk (Mturk) workers each evaluated 14 avatars; half of the avatars were randomly selected from the transgender condition and half were randomly selected from the control condition. The coders did not see the original image of the target and did not learn any information about the gender of the avatars or the conditions under which the avatars were created. They viewed a 30-second video clip of each avatar in which the avatar stands for 10-seconds and walks for 20-seconds. Participants then rated the

gender-typicality of the avatar across six attributes (face, body, walk, clothes, muscles, and overall impression) on a scale of 1 (*extremely feminine*) to 10 (*extremely masculine*). The attributes were highly correlated ($\alpha = .91$ for the transgender avatars, $\alpha = .90$ for the control avatars). I averaged the attribute ratings across coders to create one measure of gender-typicality for each avatar.

Results

To test my hypothesis that women who are labeled transgender are perceived as less feminine than those who are not, I conducted a linear mixed model with condition as a fixed effect and coder as a random effect to account for the nested nature of the avatar evaluations. Indeed, coders rated the avatars created by individuals in the transgender condition as less feminine ($M = 2.94$, $SD = 1.18$) than those created by individuals in the control condition, ($M = 2.77$, $SD = 1.10$), $b = 0.18$, $SE = 0.05$, $t(2737.51) = 3.76$, $p < .001$, $d = 0.22$ (95% CI, 0.10 to 0.35)³.

³ 23 of the 2960 total avatar evaluations were three SDs above the mean and thus excluded from analyses. Inclusion of these evaluations does not change the results, $t(2762.51) = 3.97$, $p < .001$.

Study 1b

Study 1a provided initial evidence that information about a woman's transgender identity influenced perceptions of gender-congruence. Even with an accuracy incentive, participants who learned a woman identified as transgender represented her as less feminine than participants who did not know that information. Study 1b sought to test the effect with transmen and to explore perceiver gender as a factor that may affect perceptions of gender-typicality. I predicted men labeled transgender would be represented as less masculine than the same individuals without the transgender label. I had no *a priori* hypotheses regarding the role of perceiver gender in representations of transgender individuals.

Method

In exchange for course credit, 133 undergraduate students ($M_{age} = 20.67$, $SD = 2.91$; 66.2% women⁴) viewed a dating profile that included a photograph of a White transman. Sample size was again based off field norms for minimum cell sizes. Participants followed the same protocol described in Study 1a. In addition, at the end of the study they reported their age and gender. Three avatars were excluded from analysis. One was created by a participant under 18 years old, and two participants completed the study twice, so only their first avatar was used in analyses.

I recruited a separate sample of Amazon Mechanical Turk workers ($N = 271$; $M_{age} = 35.14$, 61.6% women; 78.6% White, 7.4% Black, 6.6% Hispanic, 4.8% Asian, 2.6% Other) to rate the avatars for gender-typicality. Sensitivity analyses suggest this sample size is sufficient to identify an effect size of $d = .17$ for a within-subjects design. Coders

⁴ I did not collect racial demographic information from undergraduate participants in this study.

followed the same protocol described in Study 1a; they rated the avatars on several dimensions using a scale of 1 (*extremely feminine*) to 10 (*extremely masculine*). Intra-avatar reliability was adequate (α 's ranged from .61 to .94).

Results

To test my hypothesis that learning a man identifies as transgender will lead participants to perceive him as less masculine, I conducted a linear mixed model with condition, perceiver gender, and their interaction as fixed effects and coder as a random effect to account for the nested nature of the evaluations. As predicted, coders evaluated the avatars created in the transgender condition as less masculine ($M = 6.02$, $SD = 1.06$) than the avatars created in the control condition ($M = 6.13$, $SD = 1.12$), $b = 0.18$, $SE = 0.06$, $t(3426.89) = 3.27$, $p = .001$, $d = 0.22$ (95% CI, 0.08 to 0.36). There was no main effect of perceiver gender, $b = 0.10$, $SE = 0.07$, $t(3470.39) = 1.46$, $p = .15$, nor was there a significant interaction between condition and perceiver gender, $b = -0.18$, $SE = 0.10$, $t(3466.47) = -1.77$, $p = .08$.

Study 2

Study 1 demonstrated that information about individuals' transgender identity affected perceptual representations of their gender-congruence. The same individual was viewed as less gender-typical when they were labeled transgender. In Study 2, I sought to extend and replicate this effect using a novel visual matching methodology. Moreover, I explored possible perceiver gender effects in perceptions of transwomen.

Morphing Stimuli Development

In Study 2, I used a paradigm that more directly captures participants' perceptual experiences and does not rely on outside raters to subjectively evaluate gender-typicality. To construct the stimuli, I used Abrasoft Fantamorph software to morph the faces of transwomen to appear more masculine and feminine. I first morphed the transgender target face with a highly feminine female exemplar selected from the Chicago Face Database. I then morphed the face with a highly masculine male exemplar. The process produces a continuum of faces that range from 100% target face to 100% feminine/masculine exemplar face (see Cole, Trope, & Balci, 2016, for more detail about this method). I extracted a series of photographs that represented the target face morphed at 7% increments with the hyper-feminine and hyper-masculine faces, respectively. The result was an array of faces in which the target's face is subtly more masculine and more feminine.

Method

Four-hundred and six heterosexual Amazon Mechanical Turk workers participated in an online study for \$0.60. Because the gender x condition interaction neared significance in Study 1b, to fully explore the role of perceiver gender, I wanted to

make sure I had an adequate sample to detect a two-way interaction with a small-medium effect size ($f = 0.15$) at 80% power ($n = 351$). Participants ($n = 38$) were excluded from analyses if they incorrectly answered both attention check questions, resulting in a final sample of 368 participants ($M_{age} = 37.70$, $SD_{age} = 12.46$; 66.8% women; 79.6% White, 6.8% Black, 3.5% Hispanic, 6.5% Asian, 3.6% Other).

Participants viewed an internship application that included a photograph of an individual paired with demographic information. In half of the profiles the target identified as female ($n = 175$). In the other half, the target identified as transgender female ($n = 193$). Other pieces of profile information (i.e., race, age, major, GPA, scores on a personality inventory) were held constant across conditions.

After viewing the application, participants completed the visual matching task. At the top right corner of the screen, participants saw the transgender target's original photograph, the same photograph that accompanied the profile. On the rest of the screen they saw a random array of 11 morphed variants of the target's face. Five faces were progressively more masculine versions of the target's face, five faces were progressively more feminine versions, and one was the target's true face. Participants had to indicate which face from the array of faces matched the target's real face (Appendix B). We coded participants' choices on a -5 (*face most prototypically masculine*) to 5 (*face most prototypically feminine*) scale where 0 represented the true face. Participants had an unlimited amount of time to make their decision. We recorded the duration of time participants spent making their selection and how confident they were in their choice from 0 (*not at all confident*) to 100 (*completely confident*). Participants also completed two attention checks (e.g., "I will select strongly disagree if I am reading this"). Finally,

participants completed additional non-related items for use in another study (see Bonagura, Howansky, Albuja, & Cole, 2018), reported demographic information, were probed for suspicion of the hypotheses, and were thanked and debriefed.

Results

I conducted a 2 (*perceiver gender*) x 2 (*transgender label*) between-subjects ANOVA to test for differences among groups on perceptions of the target's face. As predicted, participants perceived the woman labeled transgender as significantly less feminine ($M = 0.59$, $SD = 2.69$) than the same woman without the transgender label ($M = 1.10$, $SD = 2.30$), $F(1, 364) = 4.55$, $p = .03$, $\eta_p^2 = 0.01$ (95% CI, 0.01 to 0.04; Figure 3). There was no main effect of perceiver gender, $F(1, 364) = 0.03$, $p = .87$, nor was there a two-way interaction between condition and perceiver gender, $F(1, 364) = 0.89$, $p = .35$.

There were no differences among groups regarding how confident participants felt in their selections, p 's $> .29$, nor in time spent choosing the morph, p 's $> .19$. Four outliers ($\pm 3 SD$'s from the mean) were excluded in duration analyses. Inclusion of these outliers resulted in a significant main effect of perceiver gender, $F(1, 364) = 3.96$, $p = .047$, $\eta_p^2 = 0.01$ (95% CI, 0.01 to 0.04), such that men spent a longer time ($M = 42.34s$, $SD = 68.41s$) choosing the face than women ($M = 32.03s$, $SD = 29.90s$).

Study 3

In Study 2 participants represented transwomen as less like their expressed gender than ciswomen, regardless of perceiver gender. In the present study, I sought to replicate the finding that participants perceived targets labeled as transgender as less-gender congruent than the same targets without the transgender label. I aimed to do so with a larger sample and using a fully crossed 2 (*perceiver gender*) x 2 (*target gender*) x 2 (*transgender label*) design.

Method

Six-hundred and forty-two heterosexual Amazon Mechanical Turk workers participated in an online study for \$0.60. We aimed to recruit approximately 650 participants to obtain 80% power for three-way interactions using an estimated small effect size ($f = 0.11$). Participants ($n = 13$) were excluded from analyses if they incorrectly answered three or more attention check questions, resulting in a final sample of 629 participants ($M_{age} = 36.12$, $SD_{age} = 10.93$; 50.4% women; 76.2% White, 7.5% Black, 5.1% Hispanic, 7.6% Asian, 3.6% Other).

Participants were randomly assigned to see a profile of a White man ($n = 312$) or woman ($n = 317$). They saw a photograph of an individual paired with some information about them. In half of the profiles the target identified as male or female ($n = 321$). In the other half, the target identified as a transgender male or transgender female ($n = 308$). Each participant viewed one profile. Two other pieces of profile information (e.g., hobbies) were held constant across conditions.

After viewing the profile, participants completed the visual matching task from Study 2. Participants indicated which face from an array of faces matched the target's

real face. We coded participants' choices on a -5 (*face most like prototypical member of assumed natal sex group*) to 5 (*face most like prototypical member of gender identity group*) scale where 0 represented the true face. We recorded the duration of time participants spent making their selection and how confident they were in their choice from 0 (*not at all confident*) to 100 (*completely confident*).

Results

I conducted a 2 (*perceiver gender*) x 2 (*target gender*) x 2 (*transgender label*) between-subjects ANOVA to test for differences among groups on representations of the target face. As predicted, there was a main effect of the transgender label. Participants perceived the targets labeled as transgender ($M = 0.26$, $SD = 2.27$) as less like gender-congruent than the same targets without the transgender label ($M = 0.64$, $SD = 2.45$), $F(1, 618) = 4.05$, $p = .045$, $\eta_p^2 = 0.01$ (95% CI 0.01 to 0.02; Figure 4). There was also a main effect of target gender such that participants perceived the woman as less like her gender identity ($M = 0.25$, $SD = 2.44$) compared to the man ($M = 0.66$, $SD = 2.28$), $F(1, 618) = 4.59$, $p = .03$, $\eta_p^2 = 0.01$ (95% CI, 0.01 to 0.03), regardless of the transgender label. There was no significant main effect for perceiver gender, $F(1, 618) = 3.01$, $p = .08$, nor were there significant two-way interactions or three-way interactions, p 's $> .39$.

There were no differences among groups regarding how confident participants felt in their selections, p 's $> .14$. There was a main effect of target gender in that participants spent more time choosing the morph for the woman ($M = 42.06$, $SD = 27.46$) than the man ($M = 35.76$, $SD = 22.00$), $F(1, 615) = 10.18$, $p = .001$, $\eta_p^2 = 0.02$ (95% CI 0.002 to 0.041). Six participants were greater than three standard deviations above the mean on time spent on the perception task and were excluded from analyses. Inclusion of these

participants still results in a significant main effect of target gender, $F(1, 621) = 7.82, p = .01, \eta_p^2 = 0.01$ (95% CI 0.001 to 0.035) and no other main effects or interactions. There was no main effect for perceiver gender, $F(1, 621) = 0.11, p = .75$, or the transgender label, $F(1, 621) = 0.74, p = .39$, nor any two-way or three-way interactions in how long participants spent identifying the morph, p 's $> .29$.

Part 1 Summary

Across four studies, as predicted, people perceptually represented individuals identified as transgender as less gender-typical than their cisgender counterparts. In Studies 1a and 1b, people generated avatars representing both women (1a) and men (1b) who identified as transgender as less gender-typical than the same target without the transgender label. In Study 2, I replicated the effects utilizing a novel visual matching methodology and demonstrated the effects generalized across perceiver gender. In Study 3, both men and women perceived transgender men and women as less gender-typical than the same individuals without the transgender label. These studies demonstrate that individuals perceive transgender people as less gender-typical than their cisgender counterparts.

While participants perceived the transgender targets as less gender-typical than their cisgender counterparts, across conditions targets were perceived as more gender-typical than accurate. In Study 2, participants perceived both cisgender, $t(174) = 6.30, p < .001, d = 0.48$ (95% CI 0.32 to 0.63), and transgender targets, $t(192) = 3.05, p = .003, d = 0.22$ (95% CI 0.08 to 0.36), as more gender-typical than accurate. Similarly, in Study 3, people perceived both cisgender, $t(317) = 4.67, p < .001, d = 0.26$ (95% CI 0.15 to 0.37), and transgender targets, $t(307) = 1.98, p = .048, d = 0.11$ (95% CI 0.001 to 0.225), as more gender-typical than accurate. These findings are consistent with past work which found that cisgender faces were remembered as more gender-typical than accurate whereas transgender faces were remembered closer to accurate (Wittlin et al., 2018). In the present studies, transgender women did not receive the “perceptual boost” received

by cisgender women, which may have negative consequences for social categorization outcomes.

Part 2: Does selective attention contribute to perceiving transgender women as less feminine?

Part 1 of this dissertation suggests people perceive individuals labeled transgender as less gender-congruent than the same individual without the transgender label.

However, no work to date has explored the possible role of selective visual attention in producing perceptual biases toward transgender individuals. Specifically, I suggest that upon learning a person identifies as transgender, individuals may direct their attention to features that are typical of the individual's assigned sex at birth. For example, upon learning a woman identifies as transgender, individuals may selectively attend to prototypically masculine features of her body, which in turn may produce perceptual biases.

After learning a woman is transgender, people may selectively attend to masculine features due to their implicit associations and motivations. Indeed, people are unable to see all of their environment at once and must choose, consciously or nonconsciously, what information to attend to (Balcetis & Dunning, 2006; Riccio, Cole, & Balcetis, 2013). In other words, attention is selective. Of undergraduates asked to count how often a basketball is passed among a group in a video, 40% failed to see a woman in a gorilla suit walking among the players (Simons & Chabris, 1999). Further, visual processes are largely implicit and difficult for perceivers to detect, thus attention is resistant to self-regulation and sensitive to implicit attitudes and motives (Dovidio, Gaertner, Kawakami, & Hodson, 2002; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Kawakami et al., 2017).

Moreover, what people choose to attend to is often directed by motivations and goals (Reed, Betz, Garza, & Roberts, 2010). For example, rejection sensitive individuals attend to signals of inclusion (DeWall, Maner, & Rouby, 2009; Schultheiss & Hale, 2007) and those seeking power attend to expressions of low dominance (Schultheiss & Hale, 2007). Psychological and physical threats have a disproportionate effect on attention (Chajut & Algom, 2003; Cole et al., 2012). Visual attention is tuned to rapidly encode dangers such as health threats (Ackerman et al., 2009) and angry expressions (Fox, Russo, & Dutton, 2002). The extent to which social cues are considered threatening also predicts attention. Threatening outgroup members received enhanced attention while irrelevant social information received reduced attention (Kawakami et al., 2017). Given that heterosexual males may find female presenting transgender women psychologically threatening, past work linking threat to increased attention suggests they may be vigilant for masculine features.

Further, people may call on pre-existing stereotypes about transgender women and visually seek to confirm those stereotypes by focusing attention on features that support the stereotype. Individuals often have a goal to confirm pre-existing beliefs and expectations (Jonas, Schulz-Hardt, Frey, & Thelen, 2001). Indeed, biased cognition (i.e., motivated information seeking, confirmation bias) has long been documented in the field of psychology. Individuals often display biased information seeking in favor of previously held beliefs, expectations, and desired conclusions (Jonas et al., 2001; Schulz-Hardt, Jochims, & Frey, 2002). This biased information seeking also occurs in the realm of social stereotypes (Johnston, 1996). Miller and Turnbull's (1986) theory of encoding bias suggests that stereotypes lead to selective attention toward stereotype-consistent

information. Individuals' expectations may determine what they are likely to attend to in their environments (Balcetis & Dale, 2007; Broadbent, 1977; Treisman & Souther, 1986). As such, masculine stereotypes about transgender women may cause individuals to selectively attend to features to confirm their pre-existing expectations.

The minority group status of transgender individuals may also produce directed attention to distinguishing features. Kruschke's attention model (1996, 2003) suggests that individuals focus attention on features that distinguish a new category from a previously learned one. Because of the unfamiliar nature of minority group individuals, people may focus on features which distinguish minority group members from majority group members, even if they share features with the majority group (Halberstadt, Sherman, & Sherman, 2011). For transgender women, this may lead to individuals visually seeking information to distinguish them from the female majority group. Importantly, this may lead to biased perception as selective attention to distinguishing features forges a strong association between minority category membership and the distinctive features of that group (Halberstadt et al., 2011; Kruschke, 1992; Nosofsky, 1986).

Selective attention to masculine features may elicit less feminine perceptions because visual attention is an important antecedent to perception (van Koningsbruggen, Stroebe, & Aarts, 2011). Past work suggests that individuals attend to social category relevant features which then lead people to perceive and remember the target in a way that is consistent with the label (Eberhardt, Dasgupta, & Banaszynski, 2003). For example, participants' attention to facial stigmas undermined the perceiver's ability to accurately process the rest of a target's face. Further, attention to prototypically Black

features (e.g., hairstyle) influenced participants' racial categorization of other facial features (e.g., nose; MacLin & Malpass, 2001). Attention to features consistent with a transgender individuals' natal sex may bias overall perception more broadly and lead people to perceive transgender individuals in ways less consistent with their expressed identity.

In Part 2 of my dissertation, I explored selective attention as an antecedent to biased perceptions of transgender individuals. I first conducted pilot studies to 1) determine which features individuals categorize as masculine on several transgender women's bodies and 2) ensure the same features were identified as masculine when the target was described as transgender or cisgender. In Study 4, I utilized eye-tracking technology to examine whether individuals exhibit differential attention toward prototypically masculine regions depending on category information (i.e., transgender female vs. female). I then tested whether this selective attention predicts perceptions of gender-typicality using an avatar creation task. I predicted that learning an individual is transgender (vs. cisgender) would lead perceivers to focus more often and for a longer duration on features identified as masculine. I also anticipated replicating past perceptual findings, whereby participants represent transgender women as less gender-typical (i.e., less feminine) than cisgender women. Finally, I expected selective attention to mediate the relationship between the transgender label and perceptions of gender-typicality. Specifically, I expected participants to attend more frequently to prototypically masculine characteristics on the body of a woman described as transgender, which in turn, would be associated with representing her in a less feminine way.

As an exploratory question meant to provide convergent validity, I also tested whether selective avoidance of the most feminine feature on the body of a woman described as transgender would be associated with representing her in a less feminine way. Additionally, as an exploratory question meant to provide discriminant validity, I tested whether a characteristic of the target not identified as prototypically masculine or feminine was a mediator of the relationship between the transgender label and perceptions of gender-typicality.

Study 4 Pilot 1

The purpose of Pilot Study 1 was to identify bodily characteristics thought to be more prototypically masculine on a series of transgender targets. Participants saw full-body photographs of women described as transgender and identified areas they believed made her look like a man. I aimed to ultimately select a target with at least three features that participants largely agreed were prototypically masculine.

Method

Forty-six heterosexual men under 30 years-old⁵ ($M_{age} = 25.18$, $SD = 3.10$; 67.6% White, 11.8% Black, 2.9% Hispanic, 11.8% Asian, 5.9% Other) completed an online study through Amazon Mechanical Turk for \$0.25. Participants learned the study was exploring perceptions of body shapes and that they would be making observations about individuals who are transgender. They then viewed a series of seven photographs of transgender women. All piloted photographs included the target's full body and were judged by the research team to be White, presenting as female, and between the ages of 20 – 40.

Using the heatmap feature on Qualtrics, I selected various regions on the targets' bodies such as face, arms, chest, waist, hands, legs, and feet. Participants learned that when people make decisions about gender they focus on different features on the human body. They then clicked on the features of each target's body that make them seem as though they are a man. Participants next indicated the target's presumed gender (i.e., man, woman, or other) and race (i.e., Asian, Black, Hispanic, White, or Other). Participants finally reported their age, gender, and sexual orientation.

⁵ To closely match the undergraduate sample used in Study 4

I anticipated that the most prototypically masculine features may differ between targets (e.g., participants may identify the hands of Target 1 as masculine but not the hands of Target 2); however, which features are considered prototypically masculine is not as important for the purposes of this study as is consensus on the features selected.

Results

To determine which areas on each target's body participants categorized as prototypically masculine, I explored what percentage of participants identified each selected region as making the target seem "like a man." I identified the top three masculine-identified features for each target. The target with the highest consensus of the top three features was selected as the target photograph for use in Study 4. The target with the highest consensus showed on average 55.4% consensus across the top three most masculine regions: face, right arm, and thighs (Table 1). Most participants identified the target as a woman (91.3%) and White (95.7%).

Study 4 Pilot 2

The purpose of Pilot Study 2 was to determine whether participants identified different features as prototypically masculine after learning a target identified as transgender (vs. cisgender). I also aimed to identify the target's bodily characteristics thought to be more prototypically feminine. Participants saw full-body photographs of a woman either described as transgender female or female and identified areas they believed made her look like a man and areas they believed made her look like a woman. I aimed to ultimately select a target who showed consistency among the most masculine features regardless of whether she was identified as transgender or cisgender.

Method

Ninety-one heterosexual men completed an online study through Amazon Mechanical Turk for \$0.25 ($M_{age} = 30.79$, $SD = 5.60$; 73.6% White, 6.6% Black, 6.6% Hispanic, 12.1% Asian, 1.1% Other). Participants learned they would be making observations about an individual. They were randomly assigned to learn that the target identifies as transgender female ($n = 44$) or female ($n = 47$). They then viewed the target selected from Pilot Study 1 and followed the same procedure outlined in Pilot Study 1. In addition, participants also identified what features make them seem as though they are a woman for use in exploratory analyses and as pilot data for future work.

Results

I compared the top three prototypically masculine identified features between condition to determine whether participants in the transgender condition identified different features as the most masculine compared to those in the control condition. Replicating the results from Pilot Study 1, participants in the transgender condition

identified the target's face (61.7%), right arm (87.2%), and thighs (48.9%) as her most masculine features. Similarly, participants in the control condition identified the target's face (75%), right arm (72.7%), and thighs (29.5%) as her most masculine features suggesting the target's three most prototypically masculine features were consistent between conditions. Participants in both the transgender and control condition identified the target's chest as her most feminine feature (72.7% and 89.4% respectively). The only feature that was identified as both masculine and feminine to an equal degree across the transgender and control conditions was the target's calves (14.9% of participants identified the calves as masculine and 27.7% identified them as feminine), $\chi^2(3) = 2.72, p = .10$. Because the same features were identified as masculine regardless of whether the target was label cisgender or transgender, this individual was selected as the target for use in Study 4.

Study 4

In Study 4, I explored whether selective attention to masculine identified features mediates the relationship between the transgender label and perceptions of gender-typicality. Participants viewed an image of a target identified as transgender or not while an eyetracker unobtrusively recorded attention to the target's features. Using the avatar methodology from Study 1, participants then generated avatars to represent the target. I predicted that individuals would attend more frequently and for a longer duration on the masculine identified features of a transgender target compared to a control target, which in turn, would be associated with lower perceptions of gender-typicality. I also tested attention to feminine characteristics and equally feminine and masculine characteristics as tests of convergent and discriminant validity.

Method

In exchange for course credit or \$10, 292 undergraduate men participated in a study about impression formation. Sample size was based on obtaining 80% power for a mediation model using the effect size of the *c* path from prior use of this method ($r = .24$) and estimates of a moderate effect for paths *a* and *b* (r 's = .25; Schoemann, Boulton, & Short, 2017). Twenty participants identified as gay or bisexual and were excluded from subsequent analyses. A final sample of 272 straight men participated in the study ($M_{age} = 19.68$, $SD = 2.09$; 47.9% White, 6.1% Black, 11.1% Hispanic, 25.7% Asian, 9.2% Other).

Participants learned they would be reading demographic information about an individual prior to viewing a picture of and creating an avatar to represent that individual. They then watched a video demonstrating how to create the avatar. Next, participants

were unknowingly seated in front of a Tobii X2-30 eyetracking device mounted on the bottom of a computer monitor. Participants were first calibrated to the eyetracker under the guise of a concentration task. The eyetracker then unobtrusively recorded real-time eye movements using the human behavior research software *iMotions*.

Participants were randomly assigned to read a demographic profile in which the target identified as a transgender female (*transgender condition*, $n = 135$) or female (*cisgender condition*, $n = 132$). Following the demographic page, participants viewed a full screen photograph of the target for 45 seconds during which the eyetracker recorded their eye movements. Specifically, the eyetracker captured how frequently participants looked at different features of the body and the duration of time spent fixating on each feature.

After viewing the photograph, participants created an avatar of the target following the avatar protocol outlined in Studies 1a and 1b. Participants were incentivized to recreate the target accurately by offering a \$25 prize for the avatar rated as most like the individual in the photograph. Participants reported their age, gender, and sexual orientation and then completed a funneled debriefing to ensure they did not guess the true nature of the study or hypotheses.

I then recruited a separate sample of Amazon Mechanical Turk workers ($N = 339$; $M_{\text{age}} = 37.36$, 71.7% women; 71.1% White, 11.5% Black, 6.5% Hispanic, 5.0% Asian, 5.9% Other) to evaluate the femininity of the avatars in exchange for \$0.60. Sensitivity power analyses suggest this sample is sufficient to detect a minimum effect size of $d = .15$ for a within-subjects design. Coders were randomly assigned to evaluate seven avatars from each condition. The order of the avatars was randomized. Coders followed

the same protocol outlined in Studies 1a and 1b with the addition of also evaluating the gender-typicality of the avatars' arms and thighs on a scale from 0 (*extremely feminine*) to 10 (*extremely masculine*). The attributes were highly correlated ($\alpha = .92$ for the transgender avatars, $\alpha = .93$ for the control avatars). I averaged the attribute ratings across coders to create one measure of gender-typicality for each coder's evaluation of every avatar.

Results

To test the role of selective attention in perceptions of gender-typicality, I explored a conceptual model whereby learning a woman is transgender influences attention to masculine features of her body which leads to perceiving her as less feminine.

Perceptions of gender-typicality. To explore the direct effect, I first tested whether women who are labeled transgender are perceived as less feminine than those who are not. I conducted a linear mixed model with condition as a fixed effect and coder as a random effect to account for the nested nature of the avatar evaluations. Indeed, replicating the results of Studies 1a and 1b, coders rated the avatars created by individuals in the transgender condition as less feminine ($M = 3.03$, $SE = 0.07$) than those created by individuals in the control condition, ($M = 2.85$, $SE = 0.07$), $b = 0.18$, $SE = 0.05$, $t(4412.43) = 3.60$, $p < .001$, $d = 0.12$ (95% CI, 0.05 to 0.17). Six of the 4746 total avatar evaluations were three SDs above the mean and thus excluded from analyses. Inclusion of these evaluations also results in a significant difference between conditions, $t(4418.45) = 3.61$, $p < .001$.

Visual attention. For analysis of eyetracking data, I drew Areas of Interest (AOIs) on the top three prototypically masculine features of the target identified from the pilot study (i.e., face, thighs, and arm; Appendix C). I then computed measures of fixation count (how many times participants look at an AOI) and duration (how long participants spend looking at an AOI) for each established AOI (Table 2). I averaged the number of fixations on masculine AOI's to create one measure of fixation count on masculine regions to represent frequency of fixations across masculine features. Additionally, I averaged duration of time spent looking at masculine AOIs to create one duration variable to represent average time attending to masculine features. Ten participants were excluded from eyetracking analyses due to <70% exposure statistics (i.e., percentage of time the eyetracker was able to track respondent's eyes during study).

To test the *a* path of my mediation model, I explored whether experimental condition influenced visual attention. There was a marginal difference between conditions for the number of fixations on masculine-identified regions such that participants in the transgender condition fixated more frequently on prototypically masculine features ($M = 35.03$, $SD = 14.21$) than participants in the control condition did ($M = 32.00$, $SD = 12.10$), $t(254) = 1.83$, $p = .07$, $d = 0.23$ (95% CI, 0.00 to 0.47). One participant was excluded from analyses for fixating on masculine features more than three times above the mean number of fixations. Inclusion of this participant results in a non-significant difference between the means, $t(255) = 1.57$, $p = .12$. Participants in the transgender and cisgender conditions did not differ in the amount of time they spent attending to masculine areas, $t(255) = 0.79$, $p = .43$.

Attention and perceptions of gender-typicality. To test the b path of the mediation model, I next explored whether attention influences perceptions of gender-typicality. I conducted linear mixed models predicting perception with average attention to the previously identified prototypically masculine features as a fixed factor and coder as a random effect to account for the nested nature of the avatar evaluations. These models controlled for condition to assess the relationship between attention and perception across condition.

There was a significant relationship between average frequency of fixations on the target's masculine characteristics and representations of gender-typicality, $b = 0.01$, $SE = 0.01$, $t(4302.13) = 2.19$, $p = .03$, $d = 0.07$ (95% CI, 0.00 to 0.13). The more frequently participants fixated on the target's masculine areas, the less feminine they represented her. There was not a significant relationship between time spent fixating on the target's masculine features and representations of gender-typicality, $b = -0.00001$, $SE = 0.00001$, $t(4309.74) = -0.89$, $p = .37$.

Mediation analyses. I next tested average attention to the target's masculine-identified features as a mediator of the relationship between the transgender label and perceptions of gender-typicality via the MLMED macro for multilevel mediation in SPSS (Rockwood & Hayes, 2017). MLMED accounts for both the between-person and within-person variability and estimates all model parameters. Monte Carlo estimation was used to estimate the indirect effects to generate 95% confidence interval using 10,000 resamples.

Frequency of fixations to the target's masculine features mediated the relationship between the transgender label and perceived gender-typicality, 95% CI [-0.008, -0.001].

However, participants who learned the target identifies as transgender attended less frequently to her masculine characteristics, which led to representing her as less feminine (Figure 5, Panel A). Duration of fixations to the target's masculine characteristics did not mediate the relationship between the transgender label and perceived gender-typicality, 95% CI [-0.001, 0.004] (Figure 5, Panel B).

Exploratory analyses. According to the linear mixed model analysis, participants attended less frequently to the masculine features of the transgender target than the control target. This finding is contrary to hypotheses and contradicts the findings from the between-groups tests (see section on “Visual attention” above). As such, I probed further to explore the three masculine-identified areas separately. I tested attention to each of the target's masculine-identified features as mediators of the relationship between the transgender label and perceptions of gender-typicality via the MLMED macro for multilevel mediation in SPSS (Rockwood & Hayes, 2017).

Frequency of fixations to the target's arm mediated the relationship between the transgender label and perceived gender-typicality, 95% CI [0.003, 0.009]. Participants who learned the target identifies as transgender attended more frequently to her arm, which was associated with representing her as less feminine (Figure 6, Panel A). Additionally, duration of fixations to the target's arm also mediated the relationship between the transgender label and perceived gender-typicality, 95% CI [0.004, 0.009]. Participants who learned the target identifies as transgender spent more time attending to the target's arm, which was associated with representing her as less feminine (Figure 6, Panel B).

Frequency of fixations to the target's thighs also mediated the relationship between the transgender label and perceived gender-typicality, 95% CI [0.001, 0.11]. Participants who learned the target identifies as transgender attended more frequently to her thighs, which was associated with representing her as less feminine (Figure 7, Panel A). Additionally, duration of fixations to the target's thighs also mediated the relationship between the transgender label and perceived gender-typicality, 95% CI [0.01, 0.02]. Participants who learned the target identifies as transgender spent more time attending to the target's thighs, which was associated with representing her as less feminine (Figure 7, Panel B).

Frequency of fixations to the target's face did not mediate the relationship between the transgender label and perceived gender-typicality, 95% CI [-0.01, 0.01] (Figure 8, Panel A). Additionally, duration of fixations to the target's face did not mediate the relationship between the transgender label and perceived gender-typicality, 95% CI [0.00, 0.01] (Figure 8, Panel B). Contrary to hypotheses, there was a significant *a* path in the model such that participants attended less frequently and for a shorter duration on the transgender target's face compared to the cisgender target's face (Figure 8).

Feminine characteristics. I next tested attention to the target's chest, the feature identified as most feminine on the target, as a mediator of the relationship between the transgender label and perceptions of gender-typicality via the MLMED macro for multilevel mediation in SPSS (Rockwood & Hayes, 2017). Frequency of fixations to the target's chest did not mediate the relationship between the transgender label and perceived gender-typicality, 95% CI [-0.001, 0.001] (Figure 9, Panel A). Additionally, duration of fixations to the target's chest did not mediate the relationship between the

transgender label and perceived gender-typicality, 95% CI [-0.001, 0.001] (Figure 9, Panel B).

Discriminant validity. Finally, as a measure of discriminant validity, I measured attention to the target's calves as a mediator of the association between the transgender label and perceptions of gender-typicality. Frequency of fixations to the target's calves – a feature identified as equally masculine and feminine – did not mediate the relationship between the transgender label and perceived gender-typicality, 95% CI [-0.006, 0.000] (Figure 10, Panel A). Additionally, duration of fixations to the target's calves did not mediate the relationship between the transgender label and perceived gender-typicality, 95% CI [-0.003, 0.001] (Figure 10, Panel B).

Part 2 Summary & Discussion

Part 2 of my dissertation explored whether selective attention to masculine features is associated with less feminine perceptions of transgender individuals. Replicating Studies 1 – 3, participants in Study 4 represented transgender women as less gender-typical than the same target without the transgender label. Additionally, participants more frequently attended to prototypically masculine features of a woman when she identified as a transgender female compared to female; however, participants did not spend significantly more time attending to these regions. As predicted, upon learning a target identifies as transgender, participants visually attended more so to some prototypically masculine features (i.e., the target's arm and thighs), which in turn was associated with less gender-typical representations. Contrary to hypotheses, the *less* frequently participants attended to the target's face – one of the identified prototypically masculine features – the less gender-typical they represented her. Further, amount of time spent attending to the target's face was unrelated to perception, and attention to the face did not mediate the association between the transgender label and perception. Attention to the target's most prototypically feminine feature (i.e. the target's chest), was not associated with perceptions of gender-typicality, nor was attention to gender-neutral characteristics (i.e., the target's calves).

Facial Attention

In Study 4, attention toward a woman's previously identified most prototypically masculine features (i.e. thighs, arm) was associated with perceiving her as less feminine. However, attention to the target's face – one of the top three features identified as prototypically masculine – did not predict participants perceiving the target in a less

feminine way. Rather, *less* attention toward the target's face was associated with less feminine representations.

Although this effect was not in the direction I predicted, some existing work may provide clues as to why the effect emerged. For example, past work suggests biased attention away from the face, specifically the eyes, can be due to prejudice. White participants focused less frequently on the eyes of Black individuals and instead directed their gaze to other facial features like the nose and mouth (Kawakami et al., 2014). Further, participants placed in groups based on personality attended less to the eyes of those they believed were outgroup members compared to part of their ingroup. Moreover, in another study, prejudicial attitudes towards African Americans predicted avoiding attending to the eyes of Black individuals (Hansen, Rakhshan, Ho, & Pannasch, 2015). Based on this literature, attention away from the transgender target's eyes – regardless of how prototypically masculine her face is – would be related to less favorable attitudes toward her. Unfortunately, the image used in Study 4 was appropriate for measuring attention toward a target's entire body but was not precise enough to distinguish between attention to the target's face or specifically to the eyes.

Nonetheless, we might expect that underlying prejudice toward transgender individuals could account for both less attention toward the target's face and lower perceptions of gender-typicality in the transgender condition whereas attention toward a control target's masculine face, without an underlying prejudicial component, may lead individuals to subsequently perceive her as less feminine. Indeed, *more* attention to the cisgender target's face was associated with less feminine representations as predicted, $b = 0.01$, $SE = 0.003$, $t(2080) = 3.00$, $p = .003$, $d = 0.13$ (95% CI, 0.04 to 0.22). However,

less attention toward the transgender target's face was associated with less feminine representations, $b = -0.01$, $SE = 0.003$, $t(2096.85) = -2.42$, $p = .02$, $d = 0.11$ (95% CI, 0.02 to 0.19). The more participants attended to all masculine features, including the face, of the cisgender target the less gender-typical they perceived her to be. However, for the transgender target, the less participants attended toward her face the less gender-typical they perceived her to be. Underlying prejudice toward transgender individuals may have driven attention away from the transgender target's face and led to a relationship between facial attention and perceptions of gender-typicality contrary to my original prediction.

Parsing through the unique role of facial attention is particularly important for understanding interpersonal contact. During interpersonal interactions, attention to the eyes can convey important information about intentions, thoughts, and feelings (Adams & Kleck, 2005; Calder et al., 2002; Itier & Batty, 2009; Mason, Hood, & Macrae, 2004; Mason, Tatkov, & Macrae, 2005). Furthermore, attention toward the eyes triggers a humanizing mode of visual processing (Fincher, Tetlock, & Morris, 2017). If the eyes provide important information about others' feelings and intentions, but prejudicial attitudes result in less attention to the eyes, people who hold negative attitudes toward outgroup members may be locked in a vicious cycle. They may visually ignore the most important area for helping them learn about, humanize, and individuate others. Future research should consider the unique role of visual attention toward the eyes (vs. other facial features) as a predictor of representations and dehumanization of transgender individuals.

Attention to Feminine Characteristics

As an exploratory research question, I also examined whether attention toward feminine characteristics was associated with more feminine representations. Attention toward the target's chest, her most feminine-identified characteristic, was not associated with perceptions of gender-typicality. The fact that participants attended more toward masculine features, but not feminine features, of a transgender target compared to a control target provides some insight into possible antecedents of selective attention. One possible antecedent to selection attention could be curiosity. People may be unfamiliar with transgender individuals and thus exhibit selective attention toward secondary sex-characteristics. If attention differences between conditions was simply due to curiosity, then we would expect participants to attend more to a transgender target's masculine *and* feminine characteristics compared to attention toward a control target. However, the present study suggests this is not the case and the difference between attention toward transgender individuals is not exclusively driven by curiosity.

Another possible antecedent to selective attention is expectancies or stereotypes about how transgender women look. Stereotypes and expectations lead to selective attention toward regions that might confirm those stereotypes and expectations (Balcetis & Dale, 2007; Broadbent, 1977; Miller & Turnbull, 1986; Treisman & Souther, 1986). Individuals may have attended more to the transgender target's masculine features rather than feminine features due to pre-existing expectations about transgender women's appearance. Future work should consider measuring transgender stereotype endorsement as an individual difference predictor of selective attention. I would predict that individuals who expect transgender women to embody masculine characteristics may be particularly likely to exhibit selective attention toward masculine features and therefore

perceive transgender women as even less gender typical compared to individuals who do have these expectancies.

Part 3: Do people perceive Black transgender women as even less gender-typical than White transgender women?

Parts 1 & 2 of this dissertation suggest transgender individuals are visually perceived as less gender-typical than their cisgender counterparts and that selective attention to gender-incongruent features may serve as an antecedent to perceiving transgender women as less feminine. However, these studies examined perceptions of gender-typicality exclusively using White targets. In Study 5, I explored whether dual masculinity biases toward Black transgender women produce exaggerated perceptual biases.

The study of intersectionality – the meaning and implications of simultaneous social group memberships (Cole, 2009; Crenshaw, 1989; Rosette, Koval, Ma, & Livingston, 2016; Sanchez-Hucles & Davis, 2010) – has not explored how identifying as both Black and transgender may contribute to discrimination. Though no work has considered the role of dual identities on perceptual biases toward transgender women of color, broader work suggests that social perception of identities based on race and gender are interdependent (Cole, 2009; Purdie-Vaughns & Eibach, 2008; Sanchez-Hucles & Davis, 2010). Indeed, there are distinct descriptive, prescriptive, and proscriptive stereotypes for women from different racial groups (Ghavami & Peplau, 2012; Rosette et al., 2016). Importantly, membership in multiple stigmatized populations can create an additive effect for inequalities (Almquist, 1975; Beale, 1970; Epstein, 1972). For example, women of color are targets of harassment and discrimination due to both their racial and gender identities (Barnum, Liden, & Ditomaso, 1995; Berdahl & Moore, 2006; Clancy, Lee, Rodgers, & Richey, 2017). Intersectionality research suggests that

individuals with memberships in multiple stigmatized social groups often experience unique social consequences such as an additive discrimination effect.

Black transgender women occupy a unique social intersection in which transphobia, racism, and sexism can combine to result in disproportionate disparities for this population. Indeed, the unemployment rate for Black transgender women is more than three times higher than the U.S. unemployment rate, Black transgender women are two times more likely to be denied housing than White transgender women, and Black transgender individuals are more likely to leave school, both K-12 and college, due persistent harassment (James et al., 2016).

Black transgender women may also experience an additive masculinity bias stemming from dual masculinity stereotypes associated with their “transgender woman” and “Black” social category labels. In work examining cultural stereotypes about transgender individuals, transgender women were stereotyped similarly to cisgender men. For example, stereotypes about transwomen included, “masculine”, and “arrogant” (Howansky, Wilton, Young, Abrams, & Clapham, invited resubmission). Similarly, Black women are stereotyped as assertive, aggressive, and not feminine (Ghavami & Peplau, 2012; Rosette et al., 2016). Indeed, Black individuals are implicitly associated with masculinity (Adam, Hall, & Cuddy, 2013). Past research suggests that individuals associate both “blackness” and “transness” with “maleness.”

Past work also suggests Black women’s racial and gender identities can interact to lead to a masculinity bias in categorizations and evaluations. Ambiguously gendered Black faces were more frequently categorized as male than female (Johnson, Freeman, & Pauker, 2012), and masculine faces were more likely to be categorized as Black than

feminine faces (Carpinella, Chen, Hamilton, & Johnson, 2015; Miller, Maner, & Becker, 2010). Further, White participants scored the physical movements of Black people with higher masculinity ratings than the same physical movements of White people (Goff, Thomas, & Jackson, 2008). Black transgender women are not only at risk of being perceptually masculinized due to their transgender identity, but also due to their race.

Black masculinity bias may contribute to biased perceptions and categorizations of Black individuals. White participants have the most trouble categorizing gender for Black women compared to any other group (Goff et al., 2008). Activation of Black category labels can elicit related stereotypes which in turn cascade back into and weigh in on category representation which could temporarily bias perception (Freeman & Ambady, 2011; Johnson et al., 2012) and ultimately influence behavior (Stolier & Freeman, 2016).

Study 5a

In Study 5a, I explored whether Black transgender women experience exaggerated perceptual biases due to compounded masculinity biases. Using the avatar methodology from Study 1, I predicted that individuals would perceive both Black and White transgender women as more masculine than Black and White cisgender women; however, I predicted this effect would be exaggerated for Black transgender women.

Method

200 undergraduate heterosexual men (non-Black) completed an impression formation study for course credit ($M_{age} = 18.93$, $SD = 1.14$). Because the effect size of gender-typicality perceptions using Black targets was unknown, I based my sample size estimate on the field convention of 50 people per cell. Past perceptual work with a two-cell design was adequately powered with a sample of $N = 105$ (see Study 1).

Participants were randomly assigned to read one of four profiles of either a White cisgender target ($n = 51$), a White transgender target ($n = 51$), a Black cisgender target ($n = 49$), or a Black transgender target ($n = 49$). The profiles included a close-up and full-body photograph of the target and listed the target's gender and race. In the *cisgender condition*, the target identified as "female." In the *transgender condition*, the target identified as "transgender female" (Appendix D). The race of the target was identified as either "Caucasian" (*White condition*) or "African American" (*Black condition*). Targets were pre-tested to be matched on masculinity ($p = .26$), friendliness ($p = .15$), age ($p = .18$), and quality of photograph ($p = .53$). Additionally, given no gender or race information, 91.7% of pre-test respondents identified the Black target as female and

93.8% of respondents identified the White target as female. Further, 89.6% identified the Black target as African American and 89.6% identified the White target as Caucasian.

After reading the profile, participants completed the avatar generation task described in Study 1. Upon completion of data collection, I recruited a separate sample of Amazon Mechanical Turk workers ($N = 387$; 69.5% women; $M_{age} = 36.48$, $SD = 11.52$; 73.6% White, 11.9% Black, 4.7% Hispanic, 5.9% Asian, 3.9% Other) to evaluate the masculinity of the avatars in exchange for \$0.60. Sensitivity analyses suggest this sample size is sufficient to identify an effect size of $d = .14$ for a within-subjects design. Coders were randomly assigned to evaluate four avatars from each condition. Coders evaluated the gender prototypicality of the avatars across four items (i.e., face, body, muscles, and overall impression) from 0 (*extremely feminine*) to 10 (*extremely masculine*). The attributes were highly correlated ($\alpha = .92$ for the transgender avatars, $\alpha = .89$ for the control avatars). I averaged the attribute ratings across coders to create one measure of gender-typicality for each avatar.

Results

To test my hypothesis that learning a woman identifies as transgender will lead participants to perceive her as less feminine, particularly if she is Black, I conducted a linear mixed model with the transgender label, target race, and the interaction between the transgender label and race as fixed effects and coder as a random effect to account for the nested nature of the evaluations (Figure 11). Replicating the results of all previous studies, there was a main effect of transgender label such that coders evaluated the avatars created in the transgender condition ($M = 2.95$, $SE = 0.06$) as less feminine than the avatars created in the control condition ($M = 2.54$, $SD = 0.06$), $b = -0.24$, $SE = 0.05$,

$t(5497.55) = -4.79, p < .001, d = 0.12$ (95% CI, 0.07 to 0.18). There was also a main effect of target race such that coders evaluated the White avatars ($M = 2.74, SE = 0.06$) as less feminine than the Black avatars ($M = 2.75, SE = 0.06$), $b = 0.18, SE = 0.05$, $t(5496.59) = 3.53, p < .001, d = 0.09$ (95% CI, 0.04 to 0.14). There was a significant interaction between transgender label and race, $b = -0.35, SE = 0.07, t(5496.27) = -5.04, p < .001, d = 0.14$, (95% CI, 0.08 to 0.19)⁶. Coders evaluated the avatars created in the White transgender condition ($M = 3.04, SD = 1.74$) as less feminine than the avatars created in the White control condition ($M = 2.45, SD = 1.64$), $b = -0.59, SE = 0.05$, $t(2604.42) = -12.38, p < .001, d = 0.45$ (95% CI, 0.38 to 0.53). Coders also evaluated the avatars created in the Black transgender condition ($M = 2.86, SD = 1.80$) as less feminine than the avatars created in the Black control condition ($M = 2.61, SD = 1.61$), but to a lesser extent compared to the White targets, $b = -0.24, SE = 0.05, t(2512.40) = -4.78, p < .001, d = 0.18$ (95% CI, 0.10 to 0.25).

⁶ Fifteen evaluations were more than 3 SD's above the mean and excluded from analyses. Inclusion of these outliers does not affect interpretation of results.

Study 5b

Study 5 aimed to test whether Black transwomen experience a dual masculinity bias stemming from their gender and racial identities. In Study 5a, both Black and White transgender targets were perceived as less like their expressed gender compared to the targets in the control conditions. However, this perceptual bias occurred to a lesser extent for the Black, compared to White, targets. While the targets used in Study 5a did not significantly differ in ratings of masculinity during pre-testing, they may have differed in racial prototypicality. Past research exploring racial differences and visual processing established the importance of using racially prototypical targets (e.g., Eberhardt, Goff, Purdie & Davies, 2004; Pauker et al., 2013). Because I identified a Black target that did not significantly differ from the White target in evaluations of masculinity, I may have inadvertently chosen a target lower on Black racial prototypicality.

In Study 5b, I again explored whether perceivers see Black transgender women as even less feminine than White transgender women due to their compounded race and gender masculinity bias. I predicted that individuals would perceive both Black and White transgender women as more masculine than Black and White cisgender women; however, I predicted this effect would be exaggerated for Black transgender women. In Study 5b, I sought to re-examine this effect using a novel visual matching methodology with targets matched on racial prototypicality.

Morphing Stimuli Development

In Study 5b, I used the visual morphing paradigm described in Studies 2 and 3. To construct the stimuli, we used Abrasoft Fantamorph software to morph the faces of a

Black woman and a White woman⁷ to appear more masculine and feminine. The Black and White target were selected from the Chicago Face Database and did not significantly differ on racial prototypicality or masculinity.

Method

Seven-hundred and ninety-three heterosexual cisgender White men ($M_{age} = 34.51$, $SD = 10.64$) participated in an Amazon Mechanical Turk study for \$0.40. I aimed to recruit approximately 787 participants to have 80% power to detect the effect size from Study 3 ($f = .10$).

Participants viewed a dating profile application that included a photograph of an individual paired with demographic information (Appendix E). Participants were randomly assigned to view one of four profiles in which the target either identifies herself as a White female ($n = 202$), a White transgender female ($n = 199$), a Black female ($n = 197$), or a Black transgender female ($n = 195$). Other pieces of profile information remained constant across conditions (e.g., age, hometown, current job).

After viewing the application, participants completed the visual matching task. On the screen participants saw a random array of 11 morphed variants of the target's face. Five faces were progressively more masculine versions of the target's face, five faces were progressively more feminine versions, and one was the target's true face. Participants had to indicate which face from the array of faces matched the target's real face. We coded participants' choices on a -5 (*face most prototypically masculine*) to 5 (*face most prototypically feminine*) scale where 0 represented the true face. Participants had an unlimited amount of time to make their decision. We recorded the duration of time

⁷ I used faces from the Chicago Face Database to ensure targets matched on racial prototypicality. As such, I do not know whether these targets identify as transgender or cisgender.

participants spent making their selection and how confident they were in their choice from 0 (*not at all confident*) to 100 (*completely confident*). Finally, participants reported demographic information, were probed for suspicion of the hypotheses, and were thanked and debriefed.

Results

I conducted a 2 (*transgender label*) x 2 (*target race*) between-subjects ANOVA to test for differences among groups on perceptions of the target's face (Figure 12). As predicted, participants perceived the woman labeled transgender as significantly less feminine ($M = -0.17$, $SD = 1.98$) than the same woman without the transgender label ($M = 0.13$, $SD = 2.01$), $F(1, 789) = 4.31$, $p = .04$, $\eta_p^2 = 0.01$ (95% CI, 0.00 to 0.02). There was no main effect of target race, $F(1, 789) = 1.18$, $p = .28$, nor was there a two-way interaction between transgender label and target race, $F(1, 789) = 0.46$, $p = .50$.

There was a significant difference in confidence of selection such that participants were less confident in their selection of the Black target ($M = 40.46$, $SD = 23.96$) than of the White target ($M = 49.61$, $SD = 25.59$), $F(1, 788) = 26.99$, $p < .001$, $\eta_p^2 = 0.03$ (95% CI, 0.01 to 0.06). There was no main effect of transgender label, $F(1, 788) = 1.47$, $p = .23$, nor was there a two-way interaction between transgender label and target race, $F(1, 788) = 0.56$, $p = .45$.

Eight participants were more than three standard deviations above the mean and excluded in duration analyses⁸. There was no main effect of the transgender label, $F(1, 781) = 2.61$, $p = .11$, nor of target race, $F(1, 781) = 0.57$, $p = .45$. However, there was a significant interaction between the transgender label and target race for time spent

⁸ Inclusion of these participants results in an interaction between the transgender label and race, $F(1, 789) = 4.14$, $p = .04$, and non-significant main effects for target race and the transgender label, p 's $> .55$.

choosing the morph, $F(1, 781) = 7.02, p = .01, \eta_p^2 = 0.01$ (95% CI, 0.001 to 0.03).

Participants spent significantly more time choosing the White cisgender morph ($M = 24.39, SD = 17.42$) compared to the White transgender morph ($M = 19.95, SD = 11.04$), $F(1, 394) = 9.12, p = .003, \eta_p^2 = 0.02$ (95% CI, 0.003 to 0.06). There was no significant difference in time spent choosing the morph between the Black cisgender and Black transgender condition, $F(1, 387) = 0.55, p = .46$.

Part 3 Summary & Discussion

Part 3 of this dissertation tested whether Black transgender women experience a dual perceptual masculinity bias. In Study 5a, replicating Studies 1 – 4, participants overall perceived the target labeled as transgender as less gender-typical than the target without the transgender label. In addition, there was a significant interaction between the transgender label and target race; however, the interaction was not in the predicted direction. Contrary to predictions, the bias in perceptions of gender-typicality was smaller for Black targets compared to White targets. In Study 5b, targets were matched on racial prototypicality, and I explored the effect using a visual morphing paradigm. Consistent with all previous studies, participants perceived the target labeled as transgender as less gender-typical than the target without the transgender label, regardless of race. There was no exaggerated perceptual masculinity bias toward Black transgender women.

I hypothesized that individuals would exhibit exaggerated perceptual biases toward Black transgender women stemming from dual masculinity biases due to their gender and racial identities. In both Study 5a and 5b, participants did perceive Black transgender targets as less gender-typical than Black cisgender targets, but not to an exaggerated extent. Rather, the perceptual biases were less extreme toward the Black targets compared to the White targets.

One possible reason for this attenuated effect is the use of non-Black participants. Some past work would suggest that non-Black participants would be particularly likely to exhibit exaggerated perceptual biases given that individuals rely more heavily on stereotypes when socially categorizing out-group members (Hugenberg, Young, Bernstein, & Sacco, 2010). However, other work provides reason to believe that non-

Black participants would have a more difficult time completing the visual perception tasks. In Study 5b, White participants felt less confident in their selection of the target's true face during the visual matching task. Indeed, responses in the Black condition varied more so than responses in the White condition, $F(1, 791) = 6.13, p = .01$. This finding is consistent with the Cross-Race Effect of facial recognition which suggests a tendency for perceivers to have more difficulty distinguishing between the faces of racial out-group members (Chance & Goldstein, 1996; Meissner & Brigham, 2001; Ng & Lindsay, 1994; Sporer, 2001). This effect may be due to less contact with racial out-group members and therefore less expertise perceiving faces of racial out-group members (Rhodes, Brake, Taylor, & Tan. 1989; Sangrigoli & de Schonen, 2004) or due to social cognitive biases (Hugenberg & Sacco, 2008; Fiske & Neuberg, 1990; Levin, 1996, 2000; for summary of theoretical perspectives see Young, Hugenberg, Bernstein, & Sacco, 2012). The Cross-Race Effect may have contributed to participants' perceptual responses during the visual matching task in the Black condition. However, it is important to note that, despite increased variability in perceptions of Black faces, participants did still overall perceive Black transwomen as less gender-typical than Black ciswomen. The Cross-Race Effect may have generated more ambiguity for White participants in the Black condition, making the matching task more difficult in the Black condition. Although, not so difficult as to completely attenuate differences in perception of gender-typicality between the transgender and cisgender conditions. Although non-Black participants were used in the present work to eliminate possible perceiver race effects, future work should use a racially-crossed design or control for participants' intergroup contact.

Another possibility is that the reasons Black transgender women are discriminated against more so than White transgender women do not necessarily have to do with perceptual biases. Rather, they may be driven by other factors such as age of transition, education, or class (Lombardi, 2009; see the General Discussion).

Part 4: Does perceiving transgender individuals as less like their expressed gender contribute to discrimination and aggression toward them?

Previous studies demonstrated that learning information about an individual's transgender identity shaped perceptual experiences; people labeled transgender were perceived as less gender-congruent than those who were not. In the next two studies, I tested the effects of seeing transwomen as less gender-typical on downstream consequences.

Categorization Outcomes

Transgender individuals face tremendous discrimination in housing, healthcare, and employment (James et al., 2016). Much of the discrimination transgender people face may stem from how they are categorized. For transgender people, being categorized as their identified gender represents acceptance and validation, and may have consequences for daily experience (McLemore, 2015). Moreover, numerous public policy issues rely on gender categorization (Taylor, 2007). For example, gender categorization is relevant to public restroom use (Herman, 2013), athletics (Davis, 2014), locker room use (Tobin & Levi, 2013), and public accommodations in places such as stores, restaurants and health offices (Reisner, Greytak, Parsons, & Ybarra, 2015). Perceptual biases toward transgender individuals (i.e., perceiving a transgender individual as less like their gender identity than their cisgender counterparts) reflects denial of identity and underscores the important role perceptual processes play in social policies.

In Study 6 I tested whether perceptual biases have implications for gender classification outcomes. Past work suggests visual perception is an important predictor of social categorization and subsequent behavior toward an individual (Krosch & Amodio,

2014). Additionally, how individuals are categorized influences whether those individuals are afforded category-relevant privileges (Allan, 2015). In Study 6, I predicted individuals would perceive a woman described as transgender as less gender-typical than the same woman described as cisgender which in turn would predict how comfortable they felt with the woman representing herself in a feminine way.

Aggression Outcomes

Not only are transgender individuals stigmatized, but they are also disproportionately subjected to extreme verbal and physical violence. According to the 2015 U.S. Transgender Survey Report, 48% of transgender people were verbally harassed for being transgender, and 9% of respondents were physically attacked within the last year. Further, 54% of transgender individuals reported being subjected to domestic violence and 10% reported experiencing sexual assault (James et al., 2016). Individuals with marginalized gender or sexual identities are more at risk of sexual assault and harassment than other marginalized groups and hate crimes toward LGBTQ individuals tend to be more violent than racially or religiously motivated crimes (Dunbar, 2006).

These violence disparities are even greater among transgender women. Of transgender individuals murdered between 2013 and 2017, 86% were transgender women (Human Rights Campaign, 2017). In a survey of over 27,000 American transgender individuals, nearly 40% of transgender women reported being physically attacked in school (compared to 28% of transgender men) and 21% report being sexually assaulted while at school (compared to 9% of transgender men; James et al., 2016).

Transgender individuals also experience aggression as a form of retaliation for a supposed wrong. One qualitative study found that transgender individuals reported

fearing violent retaliation if sexual partners “discovered” their transgender status (Nemoto, Operario, Keatley, & Villegas, 2004). According to Kristen Houser, the chief public affairs officer at the National Sexual Violence Resource Center, perpetrators of violence toward transgender people often behave aggressively toward LGBTQ+ individuals as “punishment” for their identities (Dastagir, 2018). Further, because individuals dehumanize transgender individuals (Nadal, Davidoff, Davis, & Wong, 2014) and find them gender threatening (see precarious manhood discussion in Supplemental Materials), they may be more likely to retaliate toward them. Some work suggests that dehumanization and threats explain support for retaliatory behaviors (Maoz & McCauley, 2008). Despite the pervasiveness of violence, limited work has explored the underlying processes behind why transgender individuals, specifically transgender women, experience such high levels of violence. In the present work, I suggest that perceptual biases are a contributor to violence toward transgender women.

Further, individuals behave aggressively toward people who violate traditional gender norms. Participants exhibited more aggression toward gay male interaction partners than heterosexual men (Parrott, 2009; Talley & Bettencourt, 2008) and targets labeled as lesbian or gay elicited more aggression than unlabeled targets (Fernald, 1996). Hypermasculine male participants and female participants exhibited more general and extreme aggression toward women who violated traditional female gender roles (Berke, Sloan, Parrott, & Zeichner, 2012; Reidy, Shirk, Sloan, & Zeichner, 2009; Reidy, Sloan, & Zeichner, 2009). Heterosexual men blame transgender and crossdressing victims of assault more so than they victim blame cisgender or homosexual individuals (Davies & Hudson, 2011). Perceiving a transgender woman as more masculine contributes to

perceptions of gender incongruency (Gerhardstein & Anderson, 2010), which may contribute to aggressive behavior.

Perceiving transgender women as masculine may also lead aggressors to feel as though the target is more capable of “handling it” due to masculine stereotypes. Men are stereotyped as aggressive, intense, strong, and forceful (Askew, 1989; Burr, 1998; Ghavami & Peplau, 2012; Prentice & Carranza, 2002). When they engage in behaviors that contradict male prescriptive stereotypes, such as not retaliating and appearing scared, they are blamed (Howard, 1984). These stereotypes about a man’s ability to defend himself imply it is expected of men to fight back and defend themselves and men should be capable of fighting off an assailant (Sharifpour, 2017). If individuals perceive transgender women to be more like men, they should be more likely to cast these same stereotypes about men onto transgender women. Therefore, people may believe that transgender women can handle assault because they are “really men.”

Study 6

In Study 6 I sought to test whether perceptual biases have implications for gender classification outcomes. Specifically, I predicted individuals would perceive a woman described as transgender as less gender-typical than the same woman described as cisgender which in turn would predict how comfortable they felt with the woman representing herself in a feminine way⁹.

Method

In exchange for monetary compensation (\$0.35), 375 heterosexual men participated in a two-part study on Amazon Mechanical Turk. I aimed to recruit approximately 350 participants to have 80% power to detect a small-medium effect size ($f = .15$), oversampling to account for attrition. Part 1 of the survey contained two attention check questions. Nine participants were not invited to participate in Part 2 because they incorrectly responded to both attention check items. Of the 366 men who were invited to Part 2, 228 completed the study and received an additional \$0.65 (62.30% retention; $M_{age} = 26.17$, $SD = 5.46$; 66.5% White, 10.1% Black, 9.2% Hispanic, 10.1% Asian, 4.1% Other). The final sample was adequately powered to detect a minimum effect size of $\eta_p^2 = 0.03$.

Part 1. Participants learned that they would be participating in an online study evaluating dating profiles. They viewed two ostensible profiles of two women along with their photographs. After viewing each profile, participants completed the same visual

⁹ In the present study I also tested five individual difference moderators of the effect. Perceptual biases were moderated by precarious manhood and gender essentialism such that individuals high in these variables were particularly likely to exhibit perceptual biases. Belief in traditional gender roles, attitudes toward transgender individuals, and gender concept clarity did not moderate the perceptual bias effect. Please see OSF site for Supplemental Materials including hypotheses and results of these exploratory analyses.

matching task described in Studies 2 & 3 for both targets. Participants saw 11 faces on the screen in a random array and indicated which face matched the target's real face.

After completing the visual matching tasks, participants responded to a variety of measures to engage them in the ostensible dating profile task and to assess baseline difference between targets. Participants reported their attitudes towards the target on a 0 (*cold*) to 100 (*warm*) feelings thermometer and evaluated the target across 12 attributes from 1 (*not at all*) to 7 (*extremely*). These attributes were organized into two components: warmth (e.g., friendly, gentle; $\alpha = .88$) and competence (e.g., intelligent, independent; $\alpha = .75$). Additionally, participants reported the degree to which they felt the target was masculine, feminine, and attractive from 1 (*not at all*) to 7 (*extremely*). Following, participants reported whether they would be likely to behaviorally engage with the target (e.g., date, get coffee with, work with; $\alpha = .86$) on a scale from 1 (*very unlikely*) to 7 (*very likely*).

Participants then learned that they would have the opportunity to obtain more information about one of the people at Time 2 of the study, and they indicated which individual they would like to learn more about (Appendix F). Ninety-eight participants chose to learn more about Target 2 and 128 chose to learn more about Target 1. Participants then responded to a variety of individual difference scales, all of which were answered using a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). These scales and subsequent exploratory analyses are included in the Supplemental Materials on OSF.

Part 2. Two weeks later, participants were invited to participate in Part 2 of the study. Participants learned that they would receive more information about the person they chose in Part 1. Participants then viewed a dating profile in which their chosen target

identified as either *transgender* ($n = 112$) or *adopted* ($n = 116$). Following the profile, participants completed the visual matching task in which they selected the targets' true face from a randomized array of faces morphed to range in masculinity and femininity. Participants were given an accuracy incentive; they learned they would enter a raffle to win a \$25 prize if they identified the target's true face. Participants then reported their evaluations, attitudes, and behavioral intentions towards the target using the same scales from Part 1. Participants also indicated how comfortable they would feel if the target expressed themselves as feminine across two items (i.e. wear dresses, makeup; $\alpha = .90$) from 1 (*extremely uncomfortable*) to 7 (*extremely comfortable*). Finally, participants indicated their agreement that the target should be categorized as a woman across two items (i.e. use the women's restroom, mark female on their driver's license; $\alpha = .92$) from 1 (*strongly disagree*) to 7 (*strongly agree*). Participants were then debriefed and thanked.

Results

Baseline target differences. We first compared baseline evaluations of targets from Part 1 of the study with the intentions of collapsing across target in our primary analyses should no significant differences emerge. Target 1 and 2 did not differ on evaluations of attractiveness, $t(365) = -0.38, p = .70$, nor femininity, $t(365) = 0.77, p = .44$. However, participants reported significantly more favorable attitudes toward Target 1 ($M = 60.64, SD = 20.67$) compared to Target 2 ($M = 55.57, SD = 20.11$) $t(365) = 3.77, p < .001$, (95% CI, -7.71 to -2.42), $d = .25$. Further, participants evaluated Target 1 ($M = 2.78, SD = 1.45$) as less masculine than Target 2 ($M = 3.19, SD = 1.61$), $t(365) = -4.39, p < .001$, (95% CI, .23 to .60), $d = .23$. Since it is feasible that participants' positive attitudes toward Target 1 or Target 1's lower levels of masculinity could play a role in

subsequent perceptual effects, we treated target chosen as an independent variable in subsequent analyses.

Perceptions of gender-typicality. To test whether participants perceived the target labeled as transgender as less gender-typical than the control target, I conducted a 2 (*target*) x 2 (*transgender label*) between-subjects ANOVA predicting perceptions of gender-typicality. Indeed, replicating all previous studies, there was a significant main effect of target label, $F(1, 222) = 4.06, p = .045, \eta_p^2 = 0.02$ (95% CI, 0.00 to 0.07). Participants chose a less feminine photo in the transgender condition ($M = 0.71, SD = 2.80$) compared to the control condition ($M = 1.38, SD = 2.68$). There was also a main effect of target such that participants perceived Target 1 as less feminine ($M = 0.51, SD = 2.55$) than Target 2 ($M = 1.74, SD = 2.87$), $F(1, 222) = 11.14, p = .001, \eta_p^2 = 0.05$ (95% CI, 0.01 to 0.11). Finally, there was a significant interaction between condition and target, $F(1, 222) = 4.60, p = .03, \eta_p^2 = 0.02$ (95% CI, 0.00 to 0.07). For Target 2, participants selected a significantly less feminine morph to represent the target in the transgender condition ($M = 0.96, SD = 2.98$) compared to the control condition ($M = 2.44, SD = 2.60$), $F(1, 96) = 6.95, p = .01, \eta_p^2 = 0.07$ (95% CI, 0.004 to 0.179). However, there were no differences between condition in the morph chosen for Target 1, $F(1, 126) = 0.01, p = .92$. In other words, individuals perceived one transgender target as less feminine than the control target, but not the other.

Perceptions of gender-typicality and social categorization outcomes. To link perceptual experiences to downstream consequences for social categorization, we tested whether the transgender label influenced perceptions of gender-typicality which in turn was related to participants' beliefs about the acceptability of dressing femininely (Figure

13, Panel A). Since the predicted perceptual effects only emerged for Target 2, we tested the mediation only with this target. We used the PROCESS macro (Hayes, 2012) to test the significance of the indirect effect using bootstrapping procedures in which the unstandardized indirect effect was computed for each of 10,000 bootstrapped samples. Indeed, perceptions of less gender-typicality mediated the relationship between the transgender label and acceptability of feminine displays, 95% CI [-0.207, -0.005]. Transwomen were perceived as less gender-typical than ciswomen, which led participants to think it was less acceptable for the target to dress femininely.

We then used PROCESS to test whether the transgender label influenced perceptions of gender-typicality, which in turn was related to the degree to which the participant felt comfortable with the target categorizing herself as a woman (Figure 13, Panel B). Indeed, perceptions of gender-typicality mediated the relationship between the transgender label and acceptability of categorization as a woman, 95% CI [-0.209, -0.007]. Transwomen were perceived less gender-typical than ciswomen, which affected perceivers' evaluations of how acceptable it was for the target to categorize herself as a woman.

Study 7

In Study 7, I explored whether biased perception plays a role in aggression, specifically aggressive retaliation, toward transgender women. In the present study, I used the avatar creation task to replicate past perceptual effects. I predicted that participants would represent a transgender woman as less like her gender identity (i.e., less feminine) than the same target without the transgender label.

I measured aggression by examining whether individuals allocated more hot sauce to a transgender woman compared to a cisgender woman. The hot sauce paradigm (Lieberman, Solomon, Greenberg, & McGregor, 1999) operationalizes aggression by measuring the amount of hot sauce allocated to a target who is known to dislike spicy foods. As of February 2019, this paradigm has been cited nearly 275 times and has been used to measure differences in aggression elicited by gender (Evers, Fischer, Rodriguez Mosquera, & Manstead, 2005; Klinesmith, Kasser, & McAndrew, 2006; Yang, Huesmann, & Bushman, 2014), race (Yang, Gibson, Lueke, Huesmann, & Bushman, 2014), and physiology (McDermott, Tingley, Cowden, Frazzetto, & Johnson, 2009).

Although administering hot sauce differs in many ways from the type of physical assault transgender individuals are likely to encounter in the real world, this paradigm is ideal for capturing physical aggression in the lab. Unlike other classic aggression measures (e.g., Buss, 1961), this paradigm does not require elaborate and expensive equipment. Further, it is not subject to the same confounds as other aggression measures, such as prosocial reasons for aggression as seen with the Teacher/Learner paradigm (Buss, 1961) or competitiveness reasons as seen with the Competitive Reaction Time Game (Taylor, 1967; Ritter & Elsea, 2005). Additionally, this paradigm allows for

aggression to be easily quantifiable (i.e., amount of hot sauce). Most importantly, this measure is ecologically valid as it reflects numerous real-world cases of hot foods being used to inflict pain on others. For example, spicy food has been used in real-world assaults (BBC News, 2001) as well as child abuse cases (Libonati, 2018; Trillin, 1977). Further, during debriefing, participants in past work using this paradigm report that they purposely allocated more hot sauce because they did not like the target and acknowledged awareness that the recipient of the hot sauce would be in considerable amounts of physical pain caused by consuming the hot sauce (Lieberman et al., 1999). While this method does have limitations (i.e., aggression is delivered from some distance from the target; Ritter & Elsea, 2005), it is a suitable aggression paradigm for the purpose of this study.

Past work established a relationship between trait aggression and allocation of hot sauce such that participants with higher trait aggression allocated more hot sauce to a partner (Adachi & Willoughby, 2011; Lieberman et al., 1999). As such, the present study measured trait aggression in order to control for pre-existing individual differences known to affect hot sauce allocation (Adachi & Willoughby, 2011).

Finally, I explored perceptions of less gender-typicality as a mediator of the relationship between the transgender label and aggression. Perceptual biases lead individuals to perceive transgender women in a less feminine way. Seeing a transgender woman as less feminine may result in aggression because men are more likely to aggress toward other men (and gender non-conforming individuals) and they expect social approval for aggression toward men. Further, aggressors may believe a transgender woman is more capable of handling violence due to masculinity stereotypes. I predicted

that individuals would perceive the transgender target as less feminine than the cisgender target, which in turn, would lead them to behave more aggressively toward her.

Method

232 heterosexual male participants completed this study for partial course credit. Seven students were excluded from analyses for not following instructions (i.e., did not allocate any hot sauce, did not wait in the appropriate waiting room), resulting in a final sample of 225 participants ($M_{age} = 18.82$, $SD = 1.69$; 20.9% White, 2.2% Black, 9.8% Hispanic, 57.8% Asian, 9.3% Other). I calculated sample size based on obtaining 80% power for a mediation model using the effect size of the a path ($r = .24$) from prior use of this method and estimates of a moderate effect for paths c and b (r 's = .25; Schoemann et al., 2017). The suggested sample size was 217, and I oversampled to account for participant and experimenter error.

As a measure of trait aggression, participants first completed the 12-item Short Form of the Buss-Perry Aggression Questionnaire ($\alpha = .84$; Bryant & Smith, 2001) as part of a larger subject pool pre-screen. Items in this measure center on physical and verbal aggression, anger, and hostility and are on a scale from 1 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*).

Participants came into the lab to complete a study exploring body size and taste preference. Upon entering the lab, participants provided experimenters with a photograph of themselves and completed a demographic profile containing information about their race, age, and gender. Participants learned they and an ostensible other participant would be allocating food to one another because the experimenter must remain blind to certain aspects of the study. Participants then completed a taste preference inventory to evaluate

their preference for six flavors, including spicy, from 1 (*no liking at all*) to 21 (*extreme liking*).

The experimenter collected the taste inventory and demographic profile from participants and left the room while the participant watched an instructional video on how to create an avatar. The experimenter returned after several minutes with a photo, demographic information, and ID number of the ostensible participant next door. The demographic information either revealed that the target identifies as a transgender female (*transgender condition*, $n = 112$) or female (*cisgender condition*, $n = 113$). Participants then completed the avatar generation task described in previous studies.

After generating an avatar to represent the target, participants received a cup with their research ID written on it. Participants learned the cup contains the sample of juice selected for them by the target who had the option to choose a juice out of an array of flavors ranging from neutral to very tart. All participants received 2-oz of juice containing a mixture of unsweetened grape Kool-Aid and white vinegar which prior work has established is very sour and unpleasant to drink (Harmon-Jones, Brehm, Simon, & Nelson, 1996; Lieberman et al., 1999). Participants in past work reported liking the tart juice significantly less than a neutral juice, regardless of individual preferences for tart foods (Lieberman et al., 1999). Participants were instructed to drink the entire juice. They then rated the taste of the juice from 1 (*neutral*) to 9 (*very tart*) and their liking of the juice from 1 (*extreme disliking*) to 9 (*extreme liking*).

Participants then learned that they would be selecting food for the target (who selected the juice for them) to try. They received a bogus taste preference inventory in which the target reported they dislike spicy food by indicating a 3 on the 21-point scale

where (1 = *not liking at all*). After several minutes, the experimenter provided participants with hot sauce, an opaque cup and lid with the target's ID number, a tasting spoon, and a bottle of water. Participants were instructed to place as much or as little hot sauce as they want into the cup and to seal it with the lid. Participants learned that the other participant would be required to consume the entire quantity of hot sauce provided to them. To ensure participants were aware of the spiciness of the hot sauce, they were instructed to use the tasting spoon to sample the sauce prior to allocation. Water was provided to ease discomfort from tasting the hot sauce. Participants learned that because the cups have lids, the experimenter would not know how much sauce they allocate. Participants were reminded again that they were allocating sauce to the individual who allocated juice to them. Participants were left alone to allocate the sauce. Finally, participants completed a funneled debriefing.

At the conclusion of data collection, I recruited a separate sample of Amazon Mechanical Turk workers ($N = 493$, $M_{age} = 37.45$, $SD = 12.95$; 65.3% women; 74.8% White, 9.1% Black, 6.7% Hispanic, 5.3% Asian, 4.1% Other) to evaluate the gender-typicality of the avatars in exchange for \$0.60. Sensitivity analyses suggest this sample size is sufficient to identify an effect size of $d = .13$ for a within-subjects design. Coders were randomly assigned to evaluate seven avatars from each condition and evaluated the avatars along the same criteria outlined in Studies 1 and 5a.

Results

Perceptions of gender-typicality. To test my hypothesis that women who are labeled transgender are perceived as less feminine than those who are not, I conducted a linear mixed model with condition as a fixed effect and coder as a random effect to

account for the nested nature of the avatar evaluations. Contrary to hypotheses, avatars created in the transgender and control conditions did not significantly differ in gender-typicality, $b = 0.05$, $SE = 0.03$, $t(6280.17) = 1.80$, $p = .07$, $d = 0.04$ (95% CI, 0.00 to 0.09). Participants in the control condition generated avatars marginally less gender-typical ($M = 2.79$, $SE = 0.06$) than participants in the transgender condition ($M = 2.74$, $SE = 0.06$).

Baseline scores. I compared evaluations of the noxious drink and preference for spicy foods between conditions. Four participants evaluated the tartness of the juice under 3 SD 's from the mean and thus were excluded from analyses. Participants in the control condition evaluated the drink as significantly more tart ($M = 7.71$, $SD = 1.57$) than participants in the transgender condition ($M = 7.19$, $SD = 1.89$), $t(219) = 2.26$, $p = .03$, $d = 0.31$ (95% CI, 0.00 to 0.57). Because of these baseline differences in juice evaluation, I ran relevant subsequent analyses controlling for evaluations of juice tartness. There was no significant difference in liking of juice between conditions, $t(222) = -0.88$, $p = .38$, nor did participants differ between conditions in their preference for spicy foods, $t(222) = -0.02$, $p = .99$.

Aggression. I compared hot sauce allocation between conditions by comparing the average weight of the hot sauce in grams delegated to the target in the *transgender* versus the *cisgender condition* using an *ANOVA* controlling for evaluations of juice taste and trait physical aggression. Five participants allocated over 3 SD 's from the mean hot sauce weight and thus were excluded from analyses¹⁰. Participants in the transgender condition allocated marginally more hot sauce ($M = 4.42$, $SD = 6.06$) than did those in the

¹⁰ Inclusion of outliers results in a non-significant difference between conditions, $F(1, 217) = 1.17$, $p = .28$.

control condition ($M = 3.34$, $SD = 4.18$), $F(1, 212) = 3.11$, $p = .08$, $\eta_p^2 = 0.01$ (95% CI, 0.00 to 0.06).

Perceptions of gender-typicality and aggression. To test whether perceptions of gender-typicality influences aggression, I first conducted linear mixed models predicting hot sauce allocation with gender-typicality rating as a fixed factor and coder as a random effect to account for the nested nature of the avatar evaluations. These models also controlled for condition, juice taste, and trait aggression to assess the relationship between perception and aggression regardless of condition and individual differences. There was a marginal relationship between representations of gender-typicality and aggression, $b = 0.10$, $SE = 0.06$, $t(1327.63) = 1.81$, $p = .07$, $d = 0.10$ (95% CI, 0.00 to 0.21). The less gender-typical participants perceived the target to be, the more aggressively they behaved toward her.

I next tested perceptions of gender-typicality as a mediator of the relationship between the transgender label and aggression via the MLMED macro for multilevel mediation in SPSS (Rockwood & Hayes, 2017). MLMED accounts for both the between-person and within-person variability and estimates all model parameters. Monte Carlo estimation was used to estimate the indirect effects to generate 95% confidence interval using 10,000 resamples. Perceptions of gender-typicality did not mediate the relationship between the transgender label and aggression, 95% CI [-0.009, 0.003] (Figure 14).

Part 4 Summary & Discussion

Part 4 of this dissertation explored the consequences of perceiving transgender individuals as less gender-typical compared to their cisgender counterparts. Study 6 partially replicated the perceptual difference effect and established that perceptual biases were associated with the extent to which participants felt comfortable with the target categorizing and representing herself in accordance with her gender identity. Study 7 did not replicate the finding that individuals perceive a target labeled as transgender as less gender-typical than the same target without the transgender label. Although participants allocated marginally more hot sauce to the transgender compared to the control target and perceptions of gender-typicality were marginally associated with aggression, perceptions of gender-typicality did not mediate the association between the transgender label and aggression.

Perceptions of Gender-Typicality and Target Effects

While the main effect of perceiving a target labeled as transgender as less gender-typical than the same target without the transgender label was replicated across six prior studies, there was a target effect for Study 6 in that participants only exhibited differences in perceptions of gender-typicality toward one of the two targets used in the study.

The target effect may be indicative of boundary conditions for the effect of perceiving transgender individuals as less gender-typical than cisgender individuals. As detailed previously, participants reported significantly more favorable attitudes toward Target 1 than Target 2 and evaluated Target 1 as less masculine than Target 2. It is possible that participants' positive attitudes toward Target 1, or Target 1's baseline lower levels of masculinity, may have played a role in mitigating differences in perceptions of

gender-typicality. Future research could systematically explore possible boundary conditions that would explain perceptual biases toward some individuals and not toward others. Indeed, it is possible individuals do not exhibit biased perceptions of gender-typicality toward trans-identified individuals who are low in assumed sex prototypicality or highly likeable.

Participants in Study 7 represented the transgender target as marginally *more* gender-typical than the control target. Across eight other studies, four using the same avatar creation paradigm, participants perceived targets labeled as transgender as less gender-typical than the same target without the transgender label. Understanding why this pattern was not identified in Study 7 – and in fact was marginally reversed – may have to do with the differences in protocol between Studies 1 through 6 compared to Study 7. Perhaps the most notable difference is that participants in Study 7 believed they were interacting with another student who was in the room next to them compared to participants across the other studies who were simply told to form impressions of a target whom students likely assumed they would never meet.

One possible reason this may have affected perceptions of the target could be due to suspiciousness or social desirability concerns during the avatar task. Several participants expressed concern to the research assistant about whether the “other participant” was going to see the avatar they made. Further, in the open-response funneled debriefing 56.47% of participants in Study 7 wrote that they felt odd or uncomfortable creating an avatar to represent their partner compared to only 1.57% of participants who were asked the same question in Study 4. Perhaps participants felt odd or more uncomfortable generating an avatar to represent another student in the next room.

This may have been particularly true for participants in the transgender condition who could have been motivated to appear without prejudice and overcompensate with more feminine representations of the transgender target. Indeed, in other work, Rutgers students evaluated transgender targets as warmer and more trustworthy than cisgender targets (Howansky, Chen, Cole, Albuja, & Chang, in prep). Perhaps this overcompensation effect was found only in perceptual representations and not the hot sauce allocation task because the hot sauce was allocated after a provocation, rather than the perceptual task which was completed before receiving the noxious drink. Future work should consider situational circumstances that attenuate differences in perceptions of gender-typicality between transgender and cisgender individuals.

Another possible methodological reason people did not perceive the transgender target as less feminine than the control target could be that providing experimenters with a photograph of themselves heightened participants' self-awareness. Mirrors and photographs heighten self-awareness and highlight discrepancies between behaviors and personal standards (Wicklund, 1975). Specifically, looking at one's own face is associated with more moral behaviors (Batson, Thompson, Seufferling, Whitney, & Strongman, 1999; Diener & Wallborn, 1976) and is known to reduce prejudice (Zarate & Garza, 2002). Perhaps by providing experimenters with a photograph taken in the lab, or selecting a previously taken photograph, participants in Study 7 were in a heightened state of self-awareness and, therefore, were especially motivated to appear without prejudice.

While the null findings in Studies 6 and 7 suggest situational or target differences which may serve as boundary conditions, it is important to note the biases in perceptions

of gender-typicality were demonstrated in seven unique targets across studies, which provides evidence that perceptions of gender-typicality differences are not unique to specific targets. The effect was also replicated across three unique contexts (i.e., work place, Study 2; general impression formation, Studies 1a, 4, 5, and 7; dating, Studies 1b, 3, and 6). Average effect sizes did not significantly differ between general impression formation ($M_d = 0.12$, $SD = 0.10$) and dating contexts, ($M_d = 0.24$, $SD = 0.05$), $t(6) = 1.75$, $p = .13$.

Specificity of Outcomes

Part 4 of this dissertation suggests perceiving a transgender target as less gender-typical predicts social categorization outcomes but not aggression. This discrepancy could be an artifact of the protocol or perhaps indicates the type of outcomes perceptions of gender-typicality predict.

It is important to note that the protocol used in Study 7 resulted in overall low levels of aggression. The mean hot sauce allocation in Study 7 ($M = 3.82g$) was much lower than typically seen with this paradigm (e.g., $M = 29.93g$, DeWall, Baumeister, Stillman, & Gailliot, 2007, Study 1; $M = 13.6g$, Baumeister, Masicampo, & DeWall, 2009, Study 3). This may be because participants in this study believed the other participant was seated nearby in the room next to them compared to other protocols which more vaguely mention the other participant is in “another room.” Milgram’s classic work on conformity and aggression suggests that people are less likely to follow instructions to harm another person when the target is nearby compared to farther away (Milgram, 1974). Indeed, seven participants in Study 7 refused to allocate any hot sauce

to the target. The protocol of Study 7 should be more closely examined to identify possible reasons for low levels of aggression.

Individuals in Study 6 perceived transgender people as less gender-typical which was associated with lower endorsement of social categorization privileges. However, in Study 7, perceptions of gender-typicality did not mediate the relationship between the transgender label and aggression. Another possible reason for this discrepancy could be that, for transgender individuals, perceptions of gender-typicality are only predictive of outcomes related to gender categorization. Whereas forms of discrimination toward transgender individuals that do not require a social gender categorization, such as aggression, are not predicted by perceptions of gender-typicality. Future work should explore whether perceptions of gender-typicality are predictive of other gendered social category privileges but not other non-gendered privileges. For example, if perceptions of transgender individuals' gender-typicality only affects gendered social category outcomes then I would predict perception would be related to the extent to which people felt transgender women should be able to compete with other female athletes in the CrossFit Games (Adebowale, 2018). Alternatively, if perceptions of gender-typicality were more generally associated with transgender discrimination, perception would also then be related to endorsement of the transgender military ban (de Vogue & Cohen, 2019). Future work should parse through what outcomes are and are not consequences of perceiving transgender individuals as less like their expressed gender.

It is important to note, that participants in Study 7 perceived the transgender target as marginally *more* feminine which may statistically account for why perceptions of gender-typicality did not mediate the association between the transgender label and

aggression. However, perceiving the target as less gender-typical *was* related to higher levels of aggression toward her suggesting some relationship more generally between perceptions of gender-typicality and aggression. As such, future work should re-examine the relationships among the transgender label, perceptions of gender-typicality, and aggression.

General Discussion

In four initial studies, I demonstrated that people perceptually represent transgender individuals as less gender-typical than their cisgender counterparts. In Studies 1a and 1b, people represented both men and women who identified as transgender as less gender-typical than the same target without the transgender label. In Studies 2 and 3 I replicated the effects utilizing a novel methodology and demonstrated the effects generalized across perceiver and target gender.

In Study 4, participants attended more frequently to some prototypically masculine regions on a transgender woman's body, which was associated with perceiving her as less feminine. This work provides some evidence that selective attention toward masculine regions contributes to less gender-typical perceptions of transgender women.

In Studies 5a and 5b, people did not exhibit exaggerated perceptual biases toward Black transgender women. Rather, differences in perceptions of gender-typicality between the cisgender and transgender conditions were either non-significant (Study 5a) or smaller for Black targets compared to White targets (Study 5b).

In Study 6, I partially replicated the perceptual effect and established that perceptions of less gender-congruence were associated with the extent to which participants felt comfortable with the transgender target categorizing and representing herself in accordance with her gender identity. Finally, in Study 7, participants did not perceptually represent transgender individuals as less gender-typical than their cisgender counterparts, nor were perceptions of gender-typicality associated with aggression toward the transgender target. Taken together, the present dissertation tested a conceptual model

of the antecedents and consequences of biased perceptions of transgender individuals, much of which was statistically supported (Figure 1).

Open Questions and Future Research

Target & perceiver generalizability. In this dissertation, I replicated the perceptual bias effect across seven unique targets, providing some evidence that perceptions of gender-typicality differences are not target specific across the targets used in the present work. However, each study, apart from Study 6, used only one target. In Studies 5a and 5b, I used one Black target and one White target. The use of one target per study allowed for the elimination of target differences and a clean test of the transgender label on perception. However, it is important to note that, across studies, targets had similarities. To eliminate suspicion in the control condition, all targets used in this dissertation passed as cisgender individuals at least 90% of the time in pre-testing. Past work suggests that gender ambiguity leads to categorization difficulties for transgender individuals. For example, one study used photographs of transgender individuals throughout their transition and found that people evaluated transgender individuals more negatively if they possessed physically androgynous characteristics because people struggled to categorize their gender (Stern & Rule, 2017). It is possible that perceptual biases are exaggerated for androgynous targets, as attention to features prototypical of targets' assigned sex at birth contributed to perceptions of gender-typicality. Future work should explore target characteristics as boundary conditions under which differences in perceptions of gender-typicality emerge.

Additionally, although the perceptual bias effect was replicated for both transgender men and women, some studies used exclusively transgender women. As a

result, whether racial differences produce unique perceptual effects for Black transgender men, for example, remains an open question. Similarly, the present work did not address whether attention to prototypically feminine features predicts less gender-typical perceptions of transgender men. Finally, the present work did not address whether perceptual biases contribute to gender classification outcomes nor aggression toward transgender men.

For some of these effects (i.e., the contribution of perception toward classification outcomes or the role of attention in predicting perception), there is little theoretical reason to believe the effects established with transgender women would not generalize to transgender men. However, Black transgender men may experience a unique intersectionality outcome unlike that of White transgender men or Black cisgender men. For example, people evaluated gay Black men as better leaders than members of either single-minority group (i.e. gay or Black; Wilson, Remedios, & Rule, 2017). Additionally, transgender men may experience aggression in a way different from transgender women. For example, while 86% of transgender individuals murdered in 2017 were women (Human Rights Campaign, 2017), transgender men are nearly 1.5x's more likely to report sexual assault (James et al., 2016). Future work should seek to replicate the present findings with a more diverse representation of transgender individuals.

Additionally, the present studies used exclusively American samples. It is possible that other nations with varying cultural definitions of gender may exhibit exaggerated or mitigated perceptual biases. For example, gender in South India is considered fixed and stable while in Melanesia gender is more flexible (Busby, 1997). Future work should

consider the role that societal conceptualizations of gender influence perception of transgender individuals.

Perceptual generalizability. The present studies operationalized perception with two unique tasks: avatar generation and facial matching. The avatar generation task provides a nuanced representation of participants' overall perceptual representation of a target. Participants can manipulate each of the target's body features, skin tone, voice pitch, walk, muscles, and more. As such, the avatar task provides a unique look into perceivers overall mental representation. However, the avatar generation task is possibly susceptible to social desirability (see Part 4 Summary & Discussion). Further, the avatar task relies on a separate sample of coders to evaluate the gender-typicality of the avatars generated by perceivers, as such, it is one step removed from perceivers' direct representations. Nonetheless, the avatar task provides a rich and nuanced representation of participants' perceptions.

The facial matching task provides a more specific measure of participants' direct perceptions of gender-typicality. The variants in the facial morphing task are generated to objectively vary on gender-prototypicality and do not rely on coders' interpretations. Further, pilot testing on the facial matching task revealed that, while perceivers can identify that the faces are different, they cannot identify *how* they are different (see Cole et al., 2016) for additional pilot testing on this method). As such, the facial matching task is not as susceptible to desirability effects as the avatar task. However, the facial matching task does not capture overall perceptual impression to the same extent as the avatar task and relies exclusively on variations of facial features. As indicated in Study 4, perception and attention toward faces is often nuanced and complicated. The avatar and

facial matching tasks each provide unique information about the ways in which perceivers see transgender individuals as less gender-typical.

More research is needed to test the specificity of transgender perceptions. Future work should replicate these findings across other perceptual variables that prototypically differ between men and women. In general, I predict the transgender label will elicit an array of perceptual biases representing differences that prototypically emerge between men and women. Indeed, past work suggests that category labels can elicit representations and perceptions of height. For example, individuals envisioned Black men as taller and more formidable than White men (Holbrook, Fessler, & Navarrete, 2016) and perceived them as such during perceptual tasks (Wilson et al, 2017), despite no true differences in average height between groups (Konlos & Lauderdale, 2007). As such, I would predict individuals would perceive transgender women as taller – or conversely transgender men as shorter – to align with pre-existing expectations that men are larger than women. Additionally, men typically have lower pitched voices than women (Smith, Jones, Feinberg, & Allen, 2012). Given that both self and other's evaluations of their voices is related to transgender individuals' reported quality of life (Hancock, Krissinger, Owen, 2011), exploring the relationship between the transgender label and auditory perceptions provides an important avenue for future research.

Identity development. The present work explores how the category label of transgender affects cisgender individuals' perceptions of transgender people. Despite a growing body of work demonstrating biased perceptual experiences, there is less work exploring biased visual representations of the *self*. Future work should consider the effect of categorization, particularly gender miscategorization, on transgender individuals' self-

perceptions. Past literature suggests that after identity denial individuals may double-down, or reassert, their identity after a miscategorization occurs (Cheryan & Monin, 2005; Guendelman, Cheryan, & Monin, 2011; Trujillo, Garcia, & Shelton, 2015). Alternatively, other work suggests that individuals use other's feedback to formulate their self-concepts (Bouchey & Harter, 2005; Burke & Stets, 2009; Cooley, 1902). As such, individuals incorporate identity-discrepant information into their self-concepts and adjust their identities to reflect the categorizations implemented by others (Khanna, 2004, 2010; Laverie & McDonald, 2007). Future work should explore whether and how gender miscategorizations affect transgender individuals' self-perceptions.

Cross-category biased visual perception. Contemporary motivated perception research has focused on the well-practiced social categories of gender and race. Gender and racial classification are good places to start given their prominence in person perception and categorization and the rapid nature by which these categorizations occur (Amodio & Bartholow, 2011). Past work demonstrated the effect of category labels regarding gender and race. For example, that the category label of “Black” affects representations or perceptions (e.g., Holbrook et al., 2016; Levin & Banaji, 2006; Wilson et al., 2017). However, the role of racial categorization on perception is presently limited to Black/White classifications. Racial categorization research should expand to include other racial groups. Additionally, the category label of “transgender” predicted memory for faces (Wittlin et al., 2018) as well as perceptual representations as indicated in the present work.

However, many open questions remain, and other social category labels should be explored. For example, perhaps the label of “elderly” affects perception of wrinkles, or

categorization as “obese” produces exaggerated size representations from both the self and others. Per the interactive theory of person control, perceptual biases should emerge based on any category label with a prototypical visual component (Freeman & Ambady, 2011). While there is some work exploring the role of category labels as well as perceiver characteristics on perceptions of others and the self, the motivated perception perspective offers a generative line of research with many possible avenues for future work.

“Perceptual” Differences

In the present work, we suggest transgender individuals are not only *thought of* as more like their assumed natal sex but *perceived* that way as well. Studying perceptual representations can help elucidate early-stage processing that guides behavior.

Individuals rely heavily on their sense of sight and use visual information as an infallible input for later decision-making. Biases in the way people see—or think they see—the world provide insight into the processes that guide people’s actions. This work extends past research on the malleability of visual perception by suggesting a transgender category label can shift the way people see and subsequently respond to an individual.

However, it is worth noting that the claims of top-down effects on perception has been the subject of debate in recent years. Some researchers suggest that what are described as effects on perception may instead be effects on judgment and memory or may come as the result of demand or response bias (e.g., Firestone & Scholl, 2016). Although arguments suggesting some studies that purport to find top-down effects on perception might be capturing memory biases or task demand are certainly important, the debate about whether top-down effects on perception exist is still far from resolved (e.g., see 34 commentary responses to Firestone & Scholl, 2016 for varying viewpoints).

While the exact nature of how “perception-based” certain effects may be is still up for debate, researchers should certainly pay heed to the call to rule out other alternative explanations (Balcetis & Cole, 2016). In the present studies, we addressed potential methodological pitfalls that have characterized some other studies in this area. For example, to address the issue of whether this is an effect of perception or memory, all the current studies always included a referent of the original target *during* the visual matching task. For example, when participants were asked to select the face of the original target among an array of facial morphs (Studies 2, 3, 5b, and 6), the original target image was displayed directly on the screen. Therefore, the task was designed to test the participants’ perceptual experiences rather than memory of the target. In addition, to reduce the influence of task demand, participants were given incentives to represent the target accurately (Studies 1a, 1b, 4, 5, 6, 7). Further, having a between-subjects design decreased the possibility of participants knowing the full purpose of the study because they were only ever provided with half of the information and stimuli from the study, so any responses from participants who accurately guessed the purpose could be discounted from the data. (No such data were excluded for this reason). Thus, the present work took several steps to ensure that it was not subject to the methodological “pitfalls” that preclude a perception-based conclusion.

Meaningful Differences

I note upfront that several p -values in this line of work near .05 and my mean observed power in some studies was lower than current field norms. To address this, I conducted a p -curve analysis of all statistical tests of the perceptual discrepancies effect to determine whether the present studies exhibit evidential value (Simonsohn, Simmons,

& Nelson, 2015). Using the full p -curve, the data show evidential value, $Z = -2.65$, $p = .004$, and do not indicate inadequateness of evidential value, $Z = 0.72$, $p = .76$. The same conclusion is drawn when using the half p -curve (evidential value: $Z = 5.11$, $p < .001$; inadequateness: $Z = 4.38$, $p > .99$).

Additionally, I meta-analyzed the perceptual discrepancies main effects using a fixed effects method in which the mean effect size was weighted by sample size (Goh, Hall, & Rosenthal, 2016). I first converted my effect sizes into Pearson's correlation for ease of analyses. All correlations were then Fisher's z transformed for analyses. Overall, the weighted effect was significant, $M_r = .07$, $Z = 3.70$, $p < .001$, suggesting that across studies people perceived transgender individuals as less gender-typical than their cisgender counterparts. A fully random effect test of the overall effect was also significant as indicated by a one-sample t -test of the mean effect size against zero, $M_r = 0.07$, $t(8) = 4.79$, $p = .001$, two-tailed. While the overall effect sizes of these perceptual difference effects are small, small effects can have meaningful real-world consequences (e.g., Greenwald, Banaji, & Nosek, 2015).

Conceptual Model of Gender-Typicality Perceptions

My dissertation developed a conceptual model of the antecedents and consequences of perceiving transgender individuals as less like their expressed gender (Figure 1). Upon learning a woman identified as transgender (vs. cisgender) participants attended more frequently to masculine-identified areas on her body. In turn, this selective attention was associated with perceiving her as less feminine. Perceiving transgender women as less feminine led individuals to feel less comfortable with her socially categorizing herself as a woman or expressing her gender identity.

Why does biased perception matter? Across my dissertation people visually perceived transgender individuals as less like their expressed gender than their cisgender counterparts. Perceiving transgender individuals as less gender-congruent can have significant consequences on impression formation due to the extent to which visual information is prioritized over other information. Vision is prioritized over auditory and tactile information when in conflict (Gray, 2009; McGurk & MacDonald, 1976). Indeed, the human eyes are biologically favored as sensory mechanisms (Fixot, 1957; Spaulding, 2008). Because people exhibit perceptual biases toward transgender individuals at the earliest and most prioritized stage of person perception, it is likely all other sensory and non-sensory information will be colored by these biased perceptions (Asch, 1946; Anderson, 1965; Jones & Goethals, 1971).

Visual perceptual biases can also have significant consequences for transgender individuals because people inherently trust their visual experiences. People have an innate belief that their sensory experiences accurately and objectively correspond to the world as it really is (Lehar, 2004; Ross & Ward, 1995, 1996). This leads individuals to exhibit excessive confidence in their visual experiences. For example, in one study, people relied on their biased visual estimates during a gambling task, even when additional information would help them to be more accurate (Andrade, 2011). This inherent trust in visual perception means individuals are unlikely to discount or override perceptual biases. Indeed, participants still systematically perceived transgender people as less gender-typical than cisgender targets even when incentivized with a cash prize to be accurate. Because people trust their perceptions of transgender individuals' gender-typicality they are unlikely to question perception even though their perceptual

experiences are biased in ways that discount transgender individuals' expressed identities.

If people prioritize and trust their visual experiences, and they visually perceive transgender individuals as less like their gender identities, that can have consequences for the way in which people behave toward them. This may be particularly important for transgender individuals since many of their daily experiences rely on gender-consistent categorizations. For example, perceiving transgender individuals as less gender-typical could contribute to inaccurate pronoun use (McLemore, 2015) or exclusion from gender-consistent restrooms (Herman, 2013), athletics (Davis, 2014), or locker rooms (Tobin & Levi, 2013). Perceiving transgender individuals as less gender-typical could contribute to some of the persistent forms of discrimination transgender people face.

Why does selective attention matter? Although attention is selective, it can be directed in ways that affect subsequent perceptions. For example, participants instructed to narrow their focus on a cooler perceived it as closer compared to participants who attended to their environments naturally (Cole, Riccio, & Balcetis, 2014). As such, understanding the relationship between selective attention to specific characteristics and perceptions of gender-typicality is informative about how attention could be directed to attenuate the effect of perceiving transgender individuals as less gender-typical than their cisgender counterparts.

In the present work, selective attention toward masculine-identified features was associated with perceiving a transgender woman as less gender-typical. If attention can be directed, perhaps one intervention for perceptual biases toward transgender individuals may involve directing attention to non-masculine features. For example, attention to a

target's eyes is predictive of intentions for future contact and a desire to better understand the target (Kawakami et al., 2014). As such, perhaps instructing participants to attend to the eyes of a transgender individual may reduce perceptual biases toward them. The present work did not find a relationship between attention to prototypically feminine characteristics and perceptions of gender-typicality, suggesting that directed attention toward feminine features may not serve as an intervention for perceiving transgender individuals as less gender-typical. Another possible intervention could be directed *avoidance* of prototypically masculine features. Identifying antecedents of perceiving transgender individuals as less gender-congruent serves as an important first step in the development of possible interventions.

Why do perceptions of gender-typicality matter (or not) for transgender women of color? People perceived White transgender women as less feminine than White cisgender women. However, this perceptual bias was either attenuated (Study 5a) or non-existent (Study 5b) for Black targets. That is, participants did not exhibit exaggerated perceptual biases toward Black transgender women. Although this attenuated effect could be an artifact of the target (Study 5a) or the participants' race, it is possible that transgender women of color are not perceived as even less gender-typical than their White transgender counterparts.

Understanding toward what groups perceptual biases do or do not occur can be informative about the unique antecedents of discrimination for different groups. While perceptions of lower gender-typicality is a contributor to discrimination toward White transgender women, discrimination toward Black transgender women may be stemming from different sources. For example, while one study found that transgender people of

color report higher frequencies of transphobic events, further analyses suggested that these discriminatory events could stem from an intersection of not just race and gender, but also class (Lombardi, 2009). Indeed, there was a strong interrelationship between race, class, and experiences of transphobia. Furthermore, transgender people of color transition at a much younger age compared to White transgender individuals which was also associated with income and education (Lombardi, 2009). Taken together, this work suggests that not only do transgender women of color experience discrimination based on being a woman, transgender, and a person of color (Crenshaw, 1991; Meyer, 2008), but also due to social class (Lombardi, 2009). Knowing that perceptions of gender-atypicality is not one of the many hurdles transgender people of color face allows future work to focus on mitigating other established predictors of discrimination toward Black transgender women.

Why does identity expression matter? Perceiving a transgender woman as less gender-congruent was associated with feeling it was less acceptable for her to express her gender identity. Specifically, participants perceived a transgender woman as less feminine which was associated with the extent to which participants felt she should be able to wear make-up and a dress.

Feeling uncomfortable with, or discouraging, transgender individuals from expressing their gender identities denies them the opportunity to be their true authentic selves. Action authenticity – or feeling as though one can actively express their true self (Kernis, 2003) – involves the ability to enact gender-relevant behaviors that are consistent with one's own gender identity (West & Zimmerman, 1987). Discouraging

transgender women's identity expression can have negative consequences for their feelings of action authenticity.

Furthermore, the discouragement of identity expression can affect transgender individuals' feelings of relational authenticity. Relational authenticity describes the extent to which individuals feel their conceptualization of their true self is in alignment with other's conceptualizations of them (Kernis, 2003). By discouraging transgender individuals from expressing their identities, perceivers suggest they do not believe their identities are legitimate, which can have negative consequences for transgender individuals' well-being. Indeed, one study found that the less relational authenticity transgender individuals felt at work, the more discrimination they reported and the less satisfied they were with their employment (Martinez, Sawyer, Thoroughgood, Ruggs, & Smith, 2016). Perceiving transgender women as less gender-typical was associated with denial of identity expression which can have negative consequences for transgender individuals' feelings of authenticity.

Why do social categorization outcomes matter? Perceiving a transgender woman as less gender-congruent was associated with the extent to which participants felt comfortable with her socially categorizing herself as a woman. That is, perceiving her as less feminine was associated with lower support for the target using the women's restroom and marking female on her driver's license.

Policy makers, voters, and the public perceiving transgender people in ways inconsistent with their gender can have large-scale consequences for transgender individuals' health and well-being. Some of these consequences are highlighted in the 2015 U.S. Transgender Survey Report (James et al., 2016). For example, 59% of

transgender respondents reported sometimes or always avoiding public bathrooms with 32% even limiting their food and water intake to avoid bathroom use. Consequently, nearly 10% of transgender individuals reported experiencing a medical problem (e.g., urinary tract infection, kidney infection) as a direct result of avoiding the bathroom. Additionally, 67% of transgender people surveyed did not have any form of ID or public record identifying their expressed gender and only 9% of individuals were able to successfully change the gender listed on their birth certificate. As a result of showing an ID with a name or gender that did not match their expressed identity, 25% of people reported being verbally harassed, 16% were denied services, 9% were asked to leave, and 2% were assaulted or attacked. Furthermore, simply fear of mistreatment or miscategorization can be detrimental to transgender individuals. Nearly 1 in 4 transgender individuals surveyed did not see a health provider due to fear of mistreatment and more than half said they were either somewhat or very uncomfortable asking the police for help (James et al, 2016).

These social affordances (i.e., what bathroom people can use, what people can mark on their government ID, whether they can expect respect from medical professionals and police) are at the very heart of transgender people's ability to be themselves and move about their social environments in a safe way. Perceiving transgender individuals as less gender-typical than their cisgender counterparts may have severe implications for the day-to-day health and well-being of transgender people.

Prescriptions for Transgender Individuals.

My dissertation suggests that learning a woman is transgender directs attention toward masculine-identified features on her body which leads people to perceive her as

less feminine and, therefore, feel less comfortable with her socially categorizing herself as a woman. According to these findings, the transgender label alone is enough to elicit biases in attention, perceptions of gender-typicality, and social privileges. Transgender individuals who want to pass as their expressed gender are up against this problematic effect where simply learning that they are transgender colors perceivers representations. So, what then are transgender people to do?

Although disclosure of a transgender identity was associated with negative consequences in the present studies, a plethora of research on concealable stigmatized identity disclosure suggests that there are many favorable outcomes associated with disclosing stigmatized identities. For example, disclosing a concealable stigmatized identity has been associated with a variety of positive personal outcomes such as the alleviated psychologic strain of maintaining the secret (Griffin, 1992; Ragins, 2008; Reynolds & Hanjorgiris, 2000), increases in overall well-being (Greenberg & Stone, 1992; Jonzon & Lindblad, 2005), and even improvement in health functioning (Cole, Kemeny, Taylor, Visscher, & Fahey, 1996; Ullrich, Lutgendorf, & Stapleton, 2003). Indeed, self-disclosure of transgender individuals' identities in the workplace were associated with increased job satisfaction and decreased job anxiety (Griffith, & Hebl, 2002; Law, Martinez, Ruggs, Hebl, & Akers, 2011). Further, disclosing concealable stigmas can have positive impacts for interpersonal relationships by increasing intimacy (Laurenceau, Barrett, & Pietromonaco, 1998; Laurenceau, Barrett, & Rovine, 2005; Manne et al., 2004) and intergroup trust (Turner, Hewstone, & Voci, 2007). There are many positive outcomes associated with disclosing concealable stigmatized identities.

Nonetheless, there are very real possible negative consequences of disclosure. For example, disclosing a concealable stigma too early in a relationship may not enhance liking (Altman & Taylor, 1973) and may lead confidants to evaluate the discloser as negative or inappropriate (see Collins & Miller, 1994, for review). For transgender individuals, disclosing their transgender status can lead to physical harm or put them at risk of social rejection (Kosenko, 2010).

It is up to each transgender individual to decide whether, when, and how to disclose their transgender status. The present dissertation unfortunately suggests lowered perceptions of gender-typicality might be one consequence. Ultimately, the onus is on perceivers, not transgender individuals, to mitigate their perceptual biases. As suggested by Lindy West (2018), “Sexism is a male invention. White supremacy is a White invention. Transphobia is a cisgender invention...Only 2.6 percent of construction workers are female. We did not install this glass ceiling, and it is not our responsibility to demolish it.”

Prescriptions for Perceivers

It is possible that learning about perceptual biases may help to attenuate their effects. According to the implicit bias literature, it is possible to break non-conscious prejudicial associations when individuals are aware of their biases and concerned about the consequences (Devine & Monteith, 1993; Plant & Devine, 2009). In one 12-week longitudinal study, participants who learned about their personal implicit biases and the consequences of racial bias showed reductions in their own bias over time (Devine, Forscher, Austin, & Cox, 2012). In other work, diversity initiatives focused on appreciating differences (Rudman, Ashmore, & Gary, 2001) and thinking about the

underlying reasons for stereotypes (Macrae, Bodenhausen, Milne, & Jetten, 1994; Richards & Hewstone, 2001) have been effective in changing personal attitudes. Indeed, an intervention study using non-confrontational content, implicit bias education, and inclusive language about the representation of women in STEM (Science, Technology, Engineering, and Math) successfully improved participants' implicit associations between women and STEM (Jackson, Hillard, & Schneider, 2014). Although perceptual biases may differ from other non-conscious biases, future work should explore whether awareness of perceptual biases toward transgender individuals and the consequences of these biases helps mitigate their prevalence. Perhaps acknowledgement of perceptual biases toward transgender individuals may be enough for them to take a second look.

Concluding Remarks

Across nine studies, an individual labeled as transgender was perceived as less gender-congruent than the same individual not given the label. Selective attention toward gender-atypical regions contributed to perceptual biases toward transgender individuals. Perceptions of transgender individuals as less gender typical contributed to the extent to which participants felt it was acceptable for the target to express and socially categorize herself according to her gender identity. Many policy issues surrounding transgender individuals (e.g., bathroom use, scholarship allocation) are contingent on how transgender people are socially categorized. By demonstrating that people see transgender individuals as less gender-typical, this work suggests perceptual biases may be one hurdle transgender individuals face in being recognized according to their expressed identities.

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Table 1. Percentage of participants in Study 4 Pilot 1 who indicated region made target “look like a man”

Target	Body Region											
	Face	Shoulders	Chest	Left Arm	Right Arm	Waist	Left Hand	Right Hand	Hips	Thighs	Calves	Feet
1	28.7	35.7	3.5	15.7	15.7	8.7	33.0	48.7	22.6	20.9	27.0	29.6
2	37.4	24.3	4.3	35.7	41.7	13.9	41.7	N/A	9.6	20.0	27.8	37.4
3	67.0	46.1	22.6	3.5	7.0	4.3	41.7	53.0	13.9	9.6	8.7	30.4
4	69.6	48.7	13	9.6	27.8	11.3	N/A	N/A	53.9	16.5	18.3	27.0
5	79.1	31.3	N/A	N/A	35.7	9.6	N/A	N/A	32.0	32.2	33.0	26.1
6	60.0	25.2	3.5	74.8	29.6	4.3	12.2	28.7	2.6	31.3	20	26.1
7	28.7	37.4	0.9	15.7	34.8	7.0	21.7	39.1	13.9	20.9	47.0	36.5

Note: Not all regions were pictured for every target (e.g., Woman 4’s hands were not visible in the photograph. Regions not displayed to participants are noted as N/A. The three features with the highest consensus among participants are bolded.

Table 2. Mean attention directed toward body features (Study 4)

	Face	Thighs	Arm	Chest	Calves
Fixation Count	25.43 (12.87)	3.54 (2.84)	4.38 (3.31)	8.33 (4.71)	3.74 (3.01)
Duration (s)	11.36 (7.26)	0.82 (0.73)	1.21 (1.05)	2.30 (1.51)	0.81 (0.72)

Note: Standard deviations are represented in parentheses.

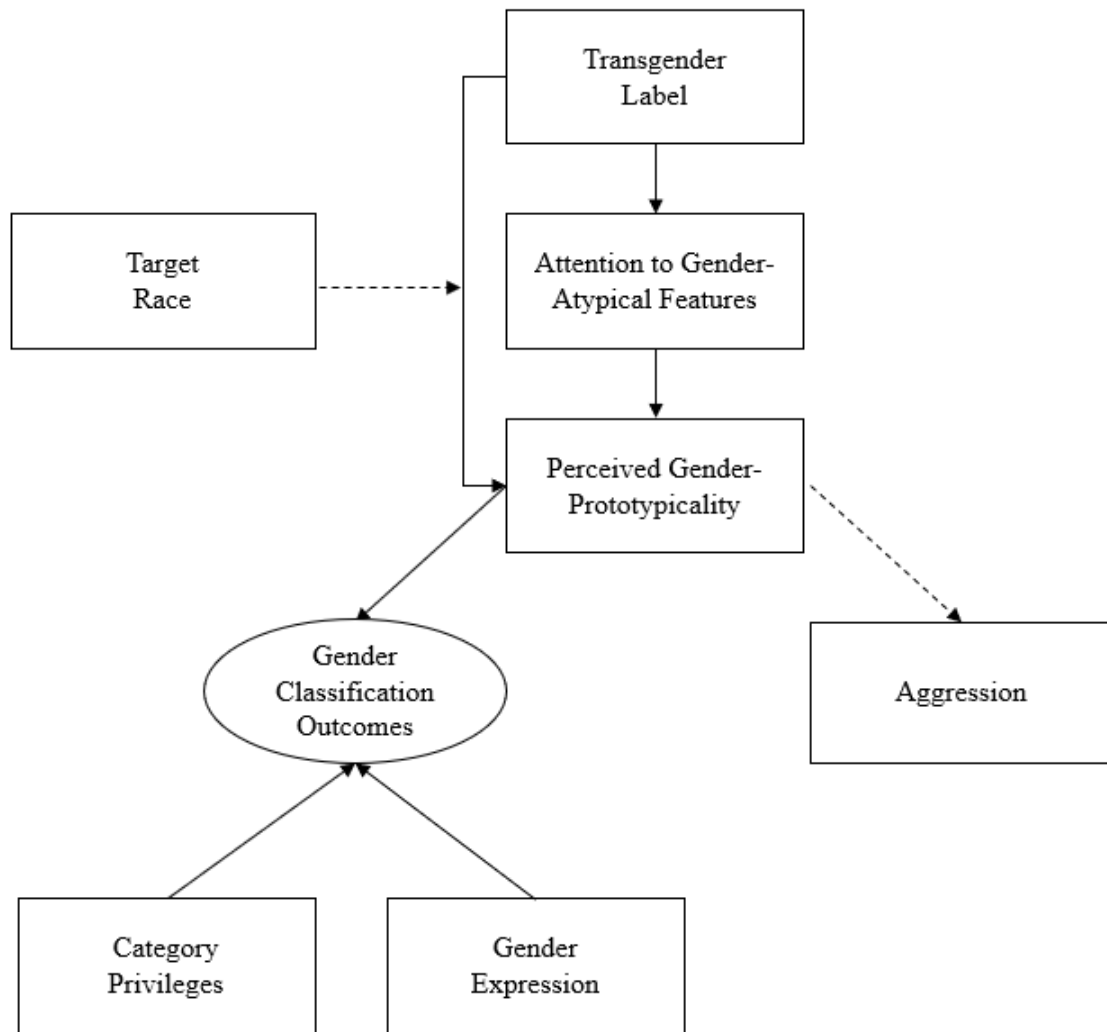


Figure 1. Conceptual model of the antecedents and consequences of perceptual biases toward transgender individuals. Dashed lines indicate unsupported predictions.









Example Avatars from Transgender Condition		Example Avatars from Control Condition	
Study 1a			
			
$M =$ 5.94	4.62	1.88	1.65
Study 1b			
			
$M =$ 3.72	4.97	6.67	6.53

Figure 2. Example avatars created by participants across conditions. Means represent the average gender-typicality rating for each example avatar (Studies 1a & 1b).

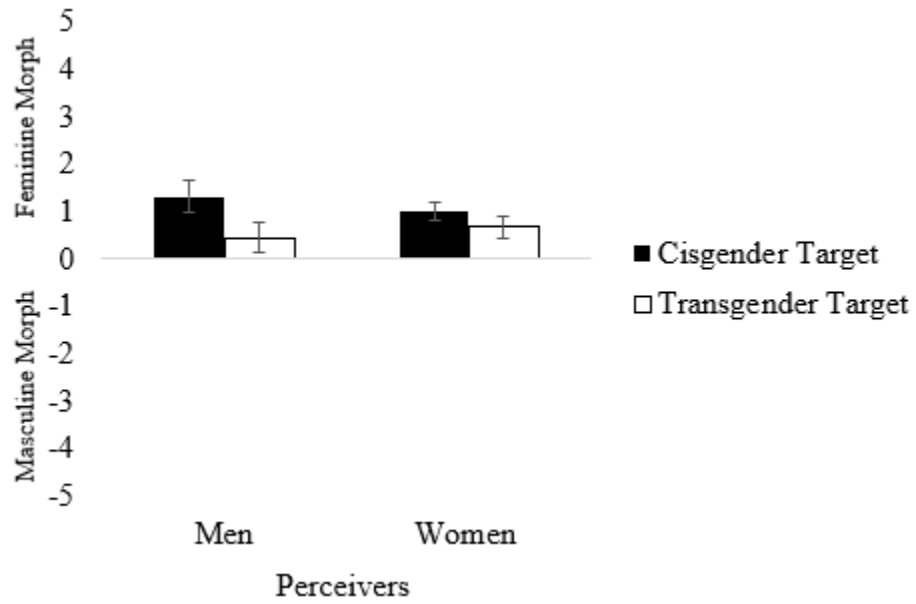


Figure 3. Targets in the transgender condition were perceived as less gender-typical than targets in the control condition (Study 2). Error bars represent standard error.

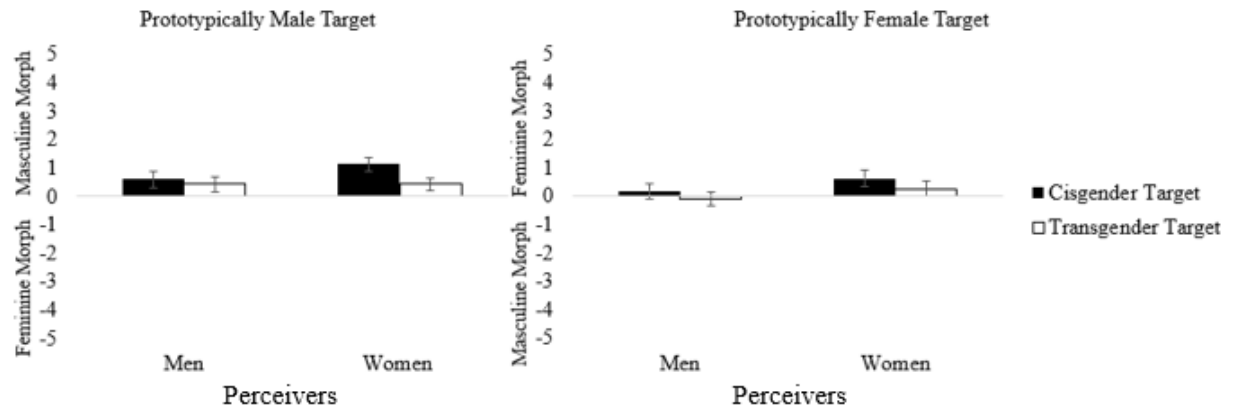


Figure 4. Targets in the transgender condition were perceived as less gender-congruent than targets in the control condition (Study 3). Error bars represent standard error.

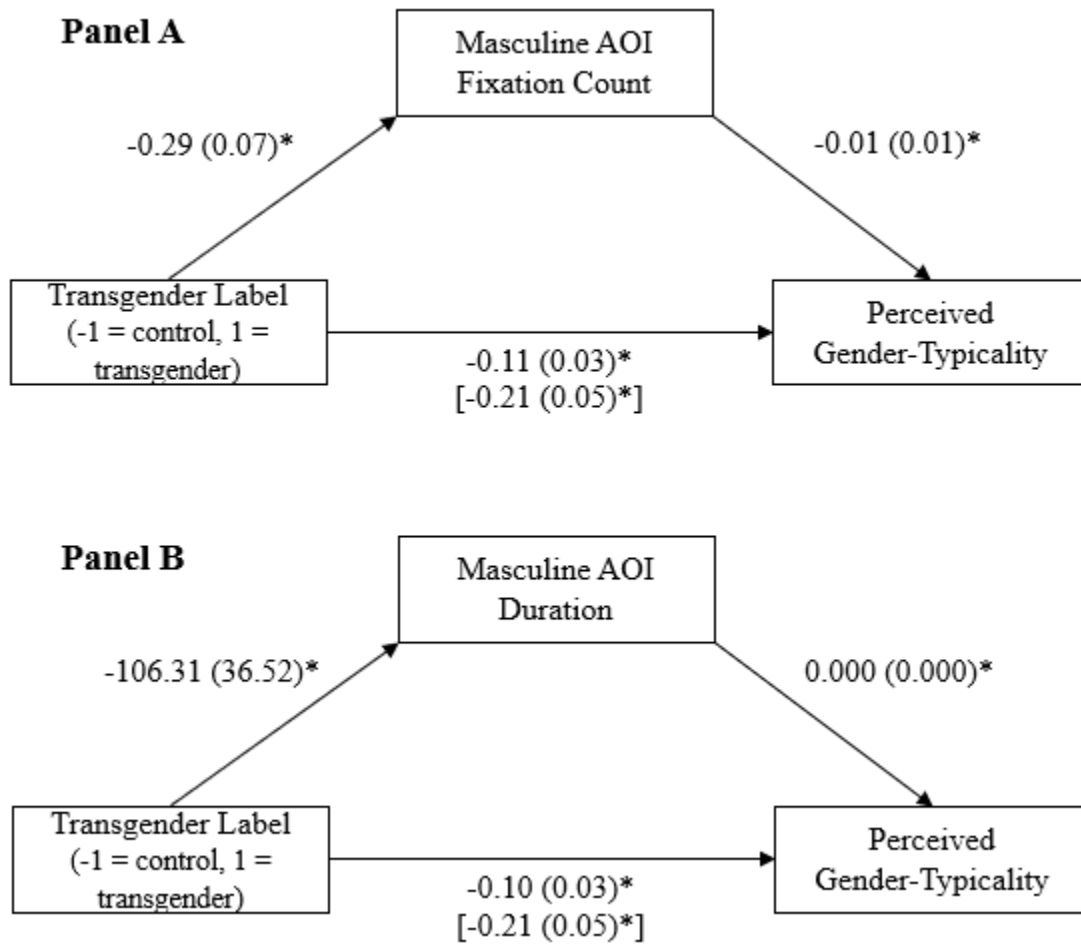


Figure 5. Unstandardized regression coefficients (and standard errors) from the mediation model in which the transgender label predicted the perceptions of gender-typicality as a function of attention to the target's masculine characteristics. Values in brackets represent the direct associations; values without brackets represent indirect associations when all variables are included in the model (Study 4). * $p < .05$.

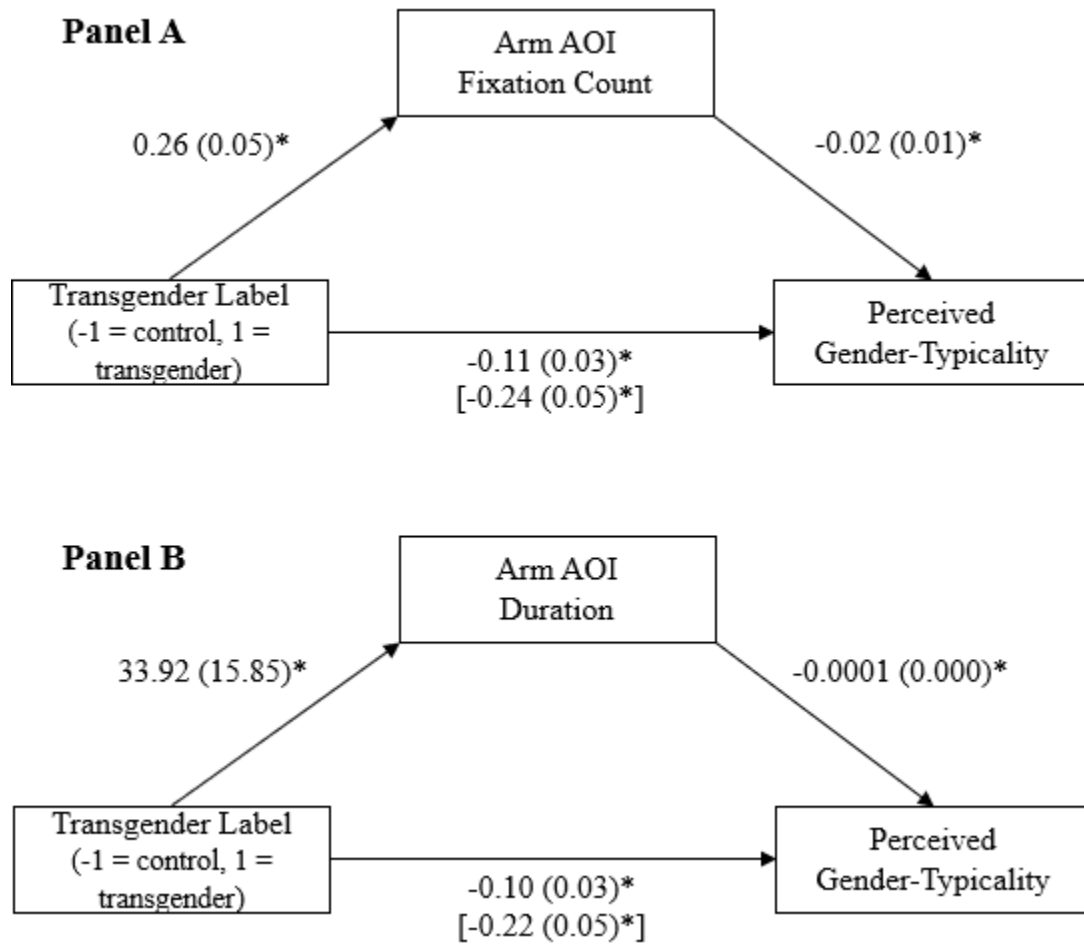


Figure 6. Unstandardized regression coefficients (and standard errors) from the mediation model in which the transgender label predicted the perceptions of gender-typicality as a function of attention to the target's arm. Values in brackets represent the direct associations; values without brackets represent indirect associations when all variables are included in the model (Study 4). $*p < .05$.

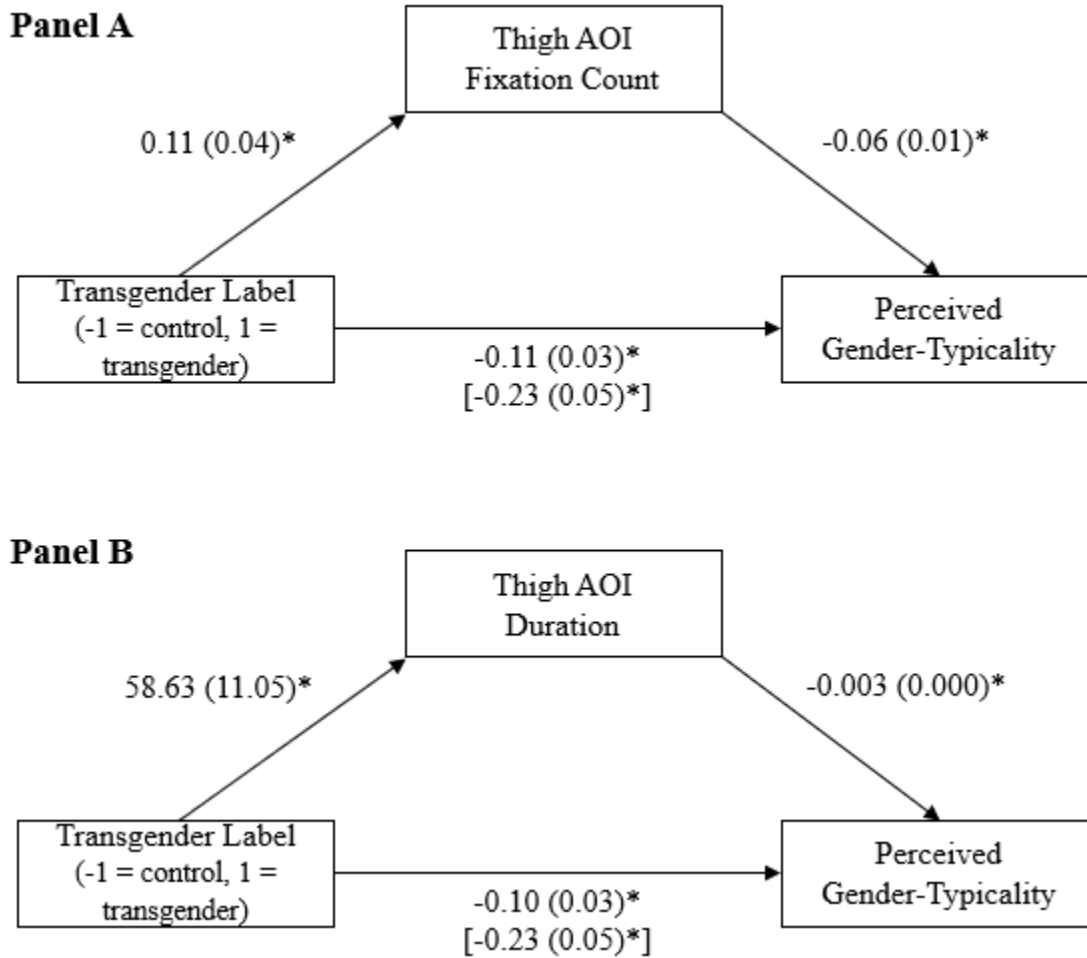


Figure 7. Unstandardized regression coefficients (and standard errors) from the mediation model in which the transgender label predicted the perceptions of gender-typicality as a function of attention to the target's thighs. Values in brackets represent the direct associations; values without brackets represent indirect associations when all variables are included in the model (Study 4). * $p < .05$.

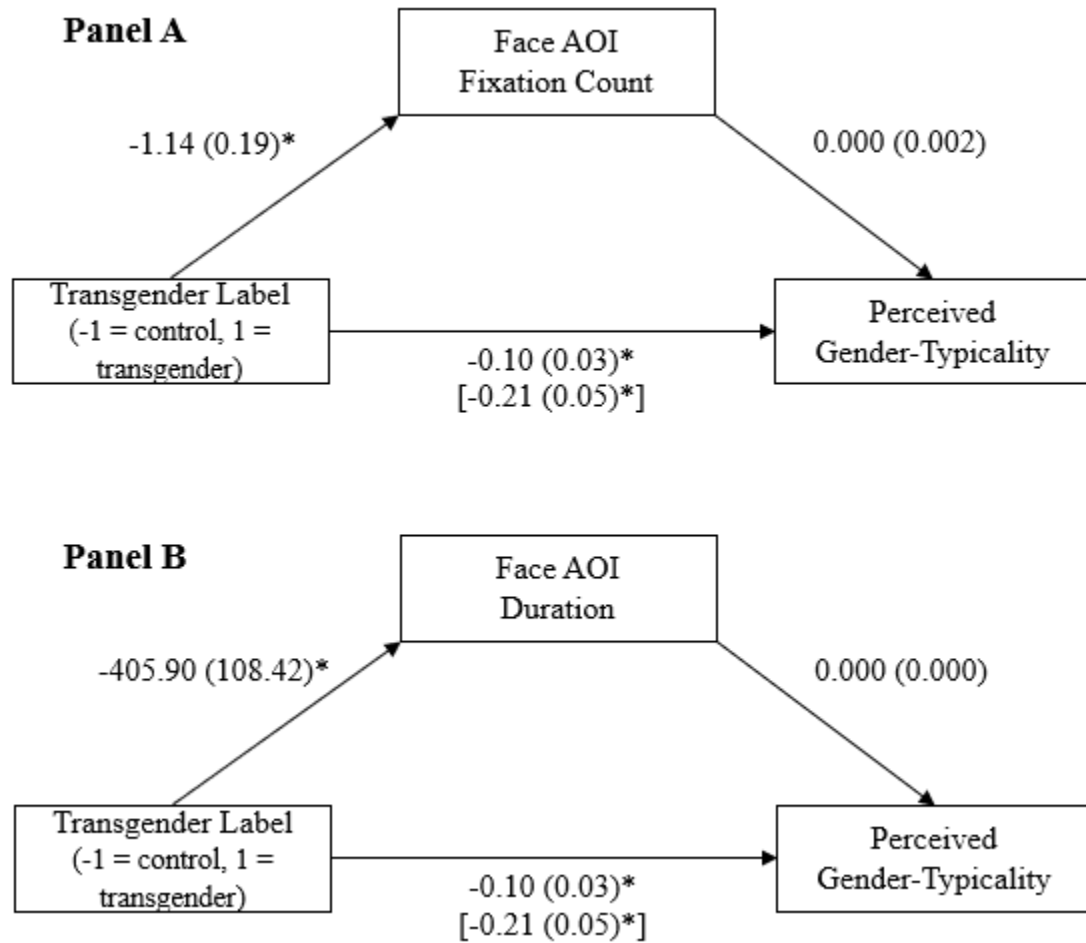


Figure 8. Unstandardized regression coefficients (and standard errors) from the mediation model in which attention to the target's face did not function as mediator for the relationship between the transgender label and perceptions of gender-typicality (Study 4). * $p < .05$.

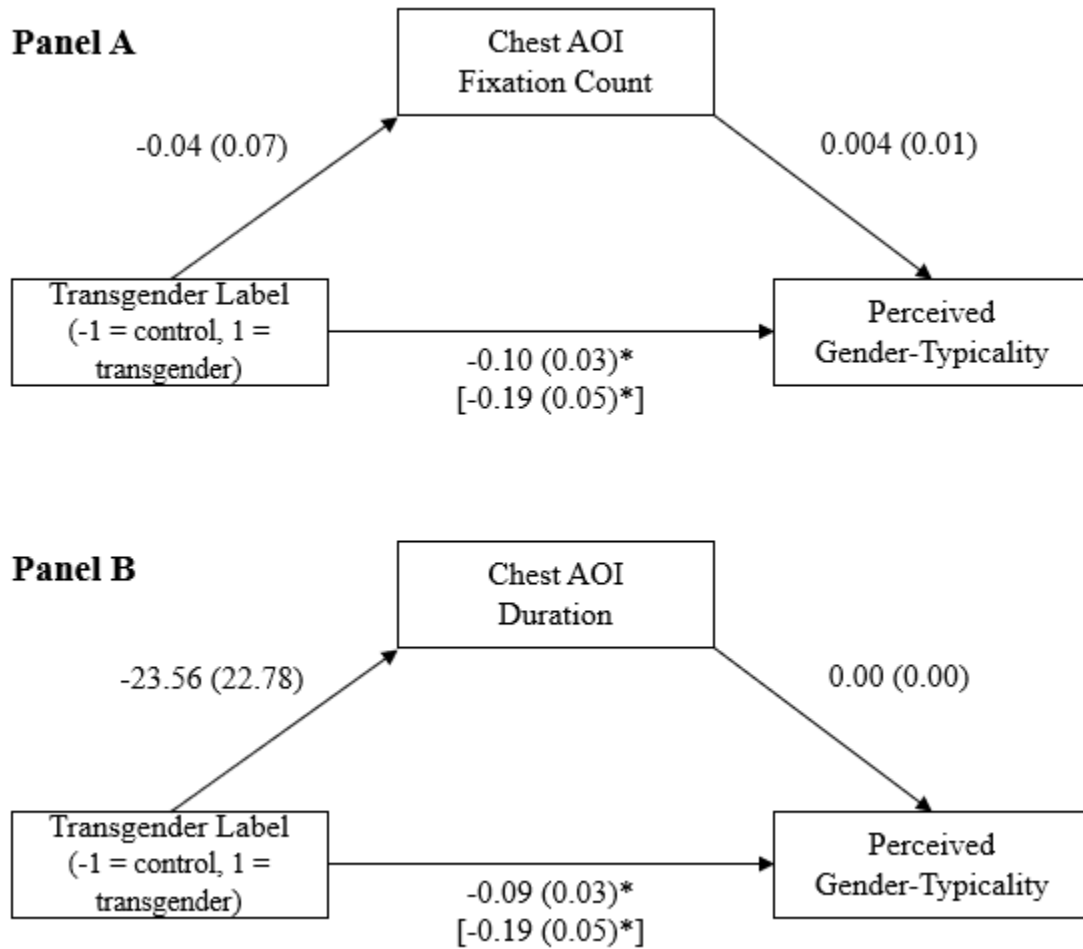


Figure 9. Unstandardized regression coefficients (and standard errors) from the mediation model in which attention to the target's chest did not function as mediator for the relationship between the transgender label and perceptions of gender-typicality (Study 4). * $p < .05$.

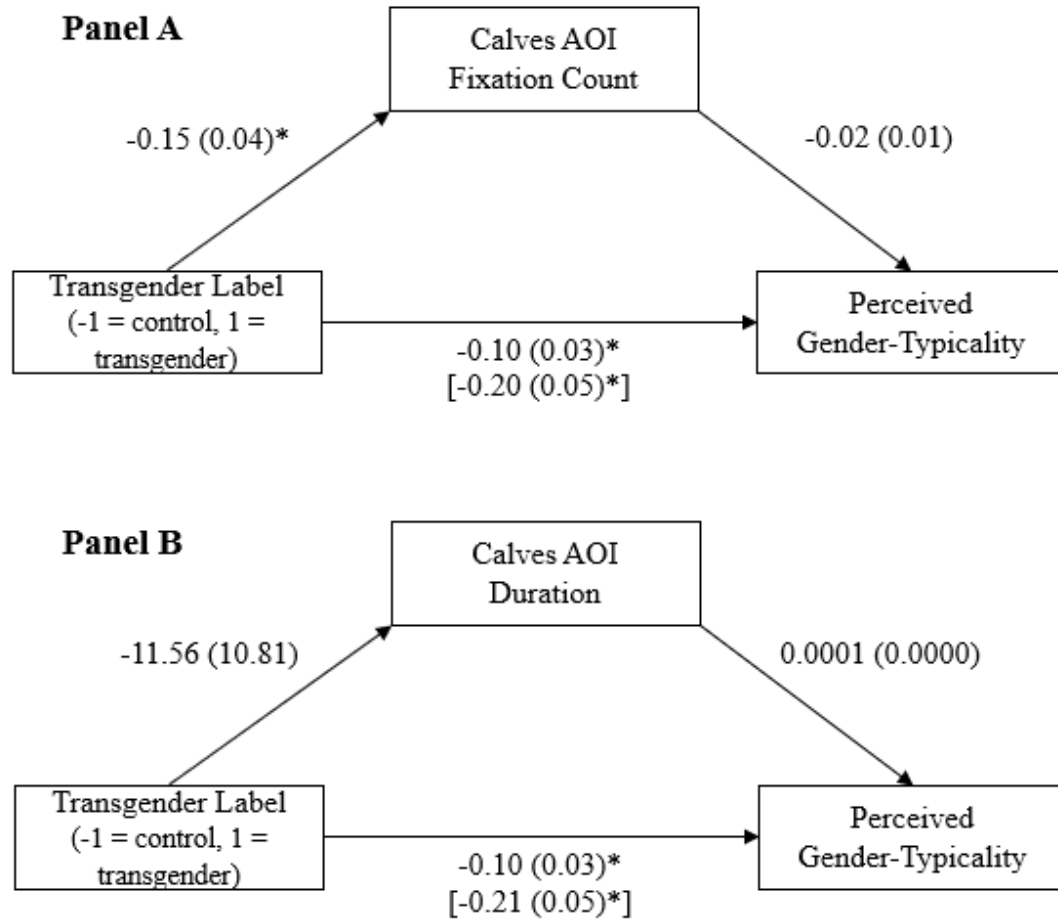


Figure 10. Unstandardized regression coefficients (and standard errors) from the mediation model in which attention to the target's calves did not function as mediator for the relationship between the transgender label and perceptions of gender-typicality (Study 4). $*p < .05$.

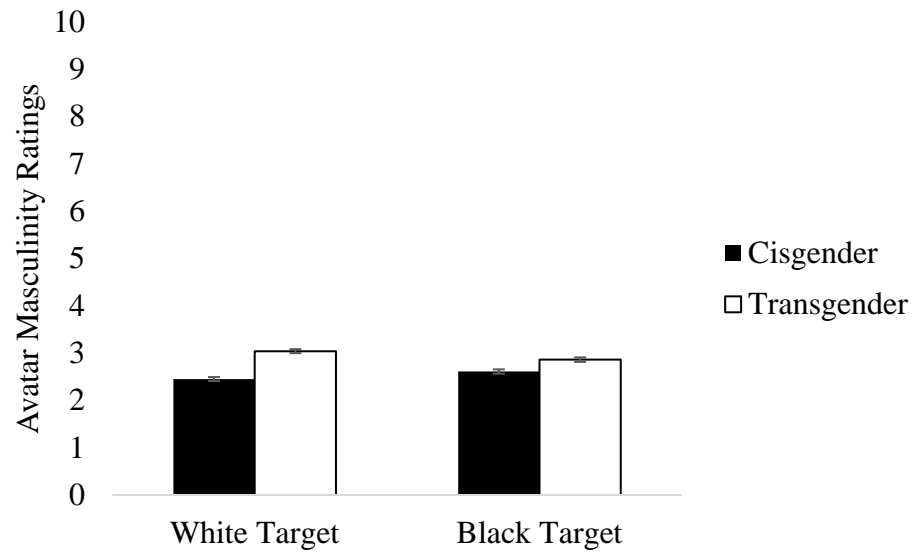


Figure 11. Moderating role of race for the relationship between the transgender label and perceptions of gender-typicality (Study 5a). Error bars represent standard error.

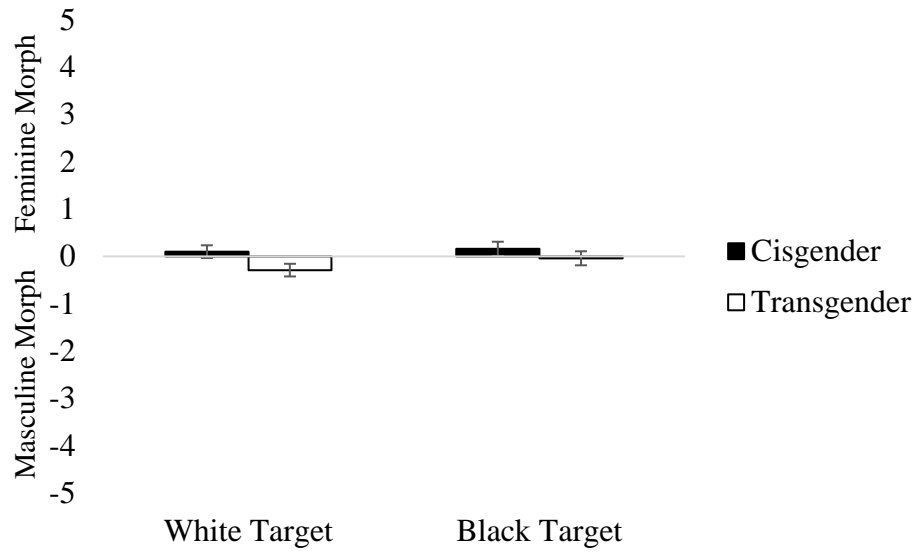


Figure 12. Targets in the transgender condition were perceived as less gender-congruent than targets in the control condition regardless of target race (Study 5b). Error bars represent standard error.

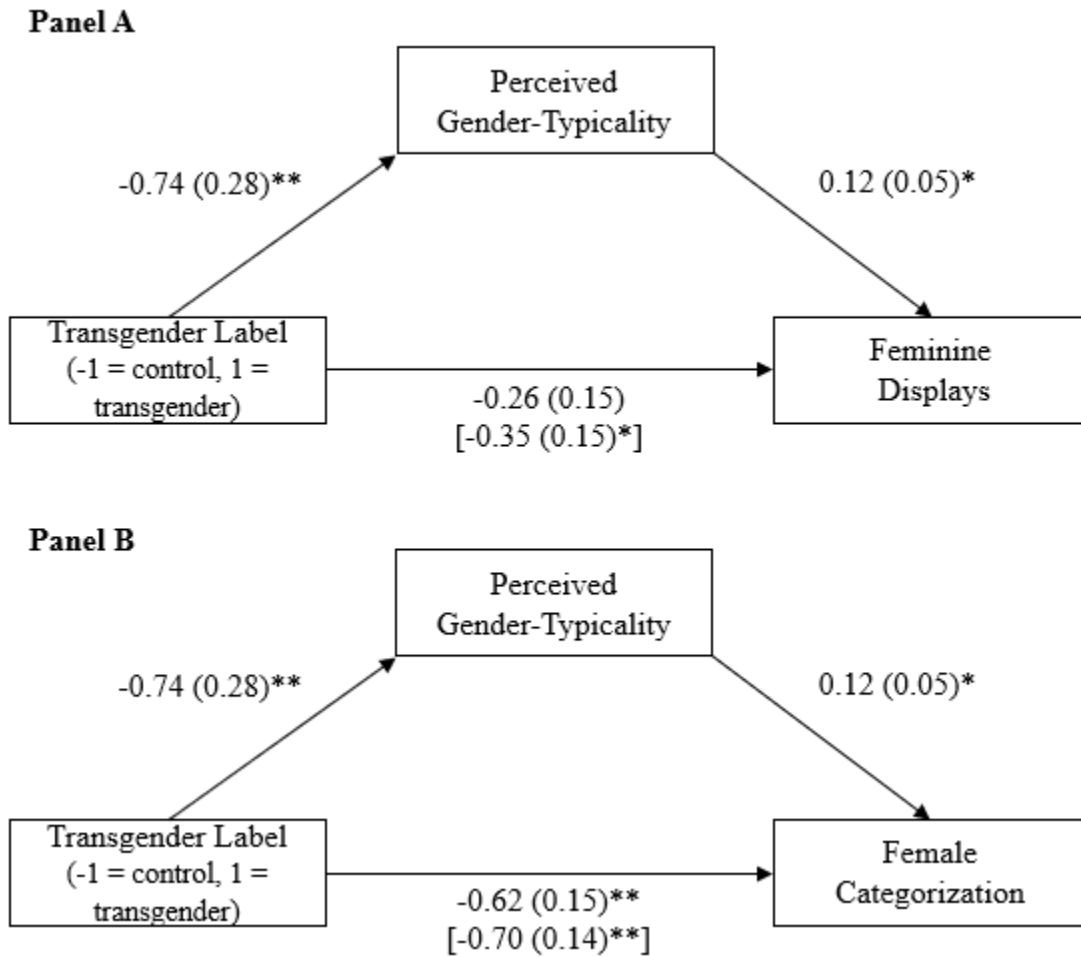


Figure 13. Unstandardized regression coefficients (and standard errors) from the mediation model in which the transgender label predicted the extent to which it was acceptable for the target to display herself in a feminine way or categorize herself as a woman as a function of perceived gender-typicality. Values in brackets represent the direct associations; values without brackets represent indirect associations when all variables are included in the model (Study 6). * $p < .05$, ** $p < .01$.

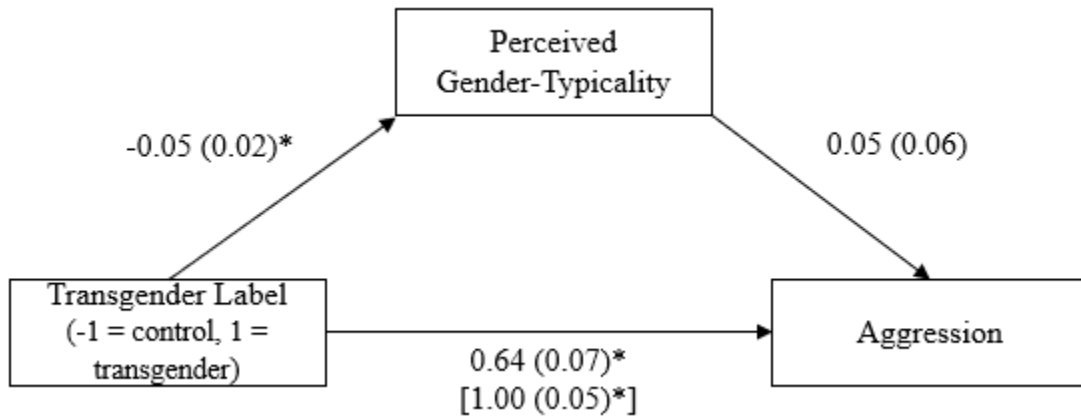


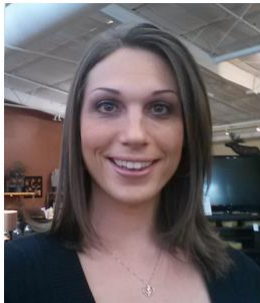
Figure 14. Unstandardized regression coefficients (and standard errors) from the mediation model in which perceived gender-typicality did not function as mediator for the relationship between the transgender label and aggression. The present model controls for participant's evaluations of the noxious juice and trait physical aggression (Study 7).

$*p < .05$.

Appendix A

Profiles Used in Study 1a

Control Condition:




Katherine

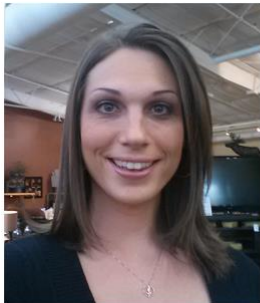
My friends describe me as:
friendly, generous, and smart

On weekends you can find me:
volunteering with Friends in Adoption. As someone who was adopted, I want to be there to support other adoptees in my community.

Things I couldn't live without:
my iPhone, my best friend, and my dog Toby!



Transgender Condition:




Katherine

My friends describe me as:
friendly, generous, and smart

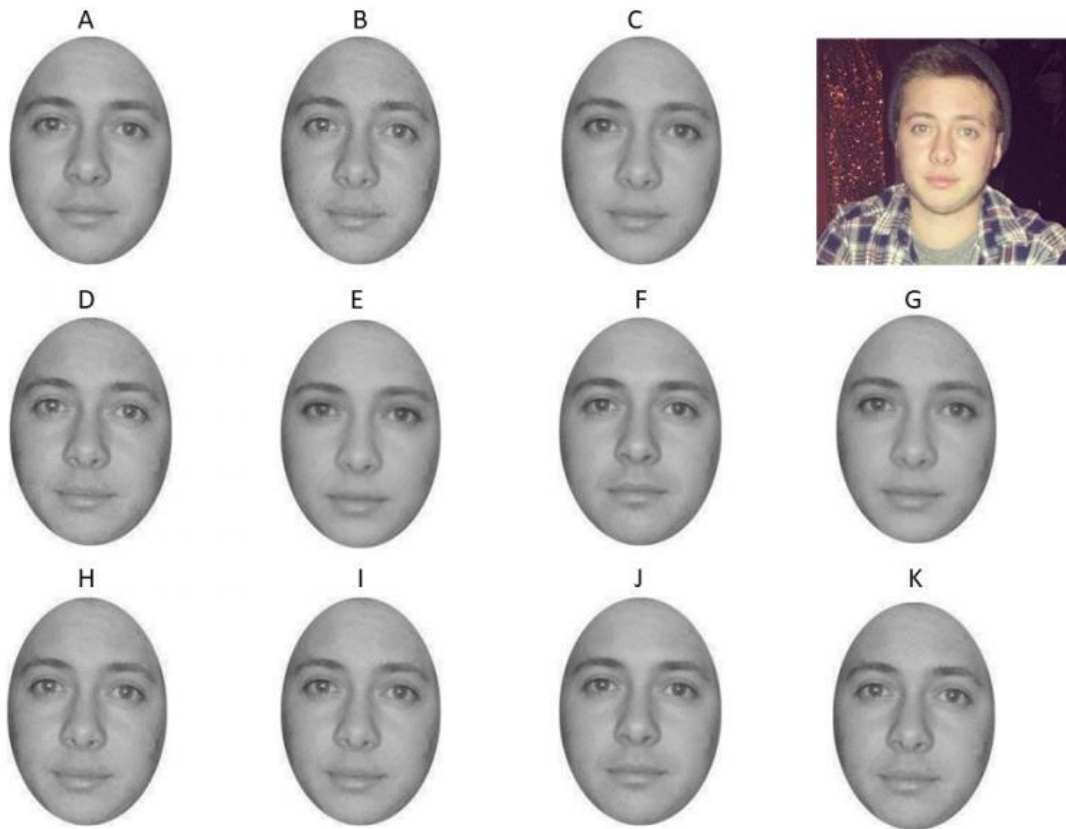
On weekends you can find me:
volunteering with Trans Lifeline. As a trans woman, I want to be there to support other transgender people in my community.

Things I couldn't live without:
my iPhone, my best friend, and my dog Toby!



Appendix B

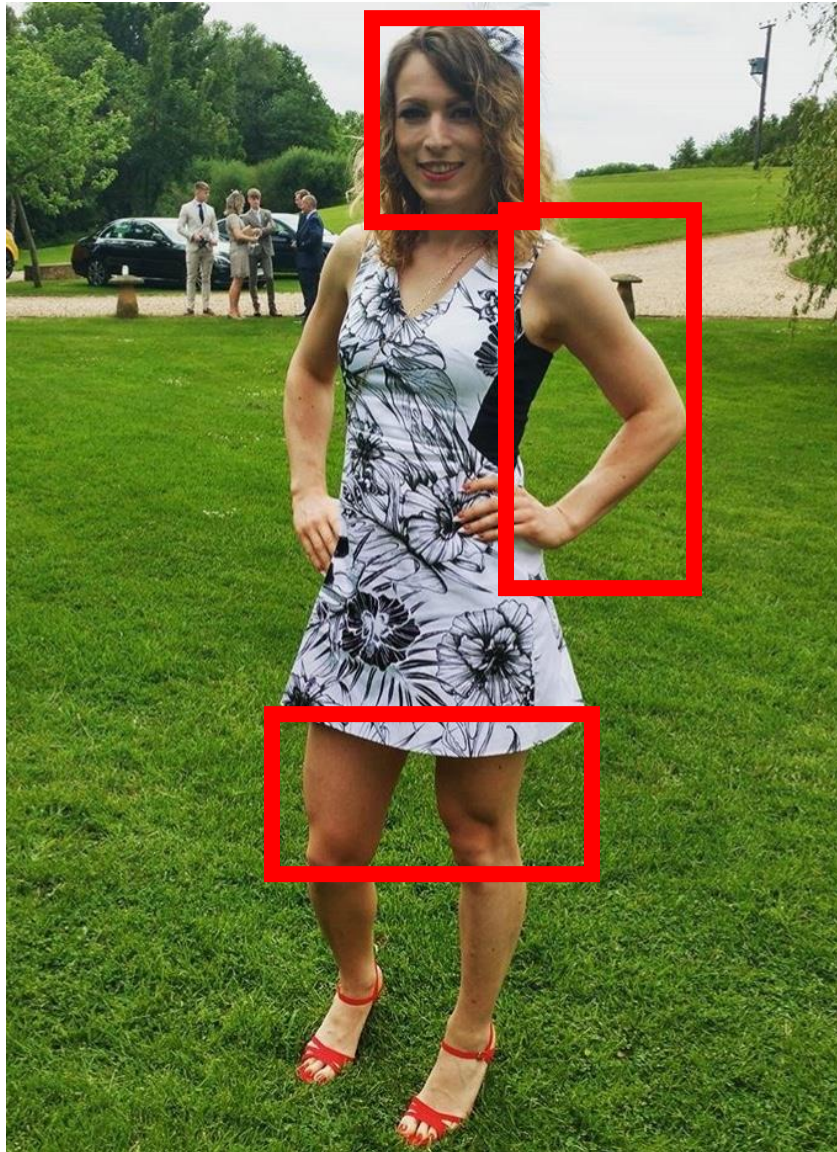
Visual Matching Task



Note: Example stimuli from Study 3

Appendix C

Target and AOI's Used in Study 4



Note: Boxes indicate AOI's to represent target's most masculine features. Participants did not see these boxes when attending to the target.

Appendix D
Profiles Used in Study 5a

Name: K. Whigham
Gender: Female
Race: Caucasian



Name: K. Whigham
Gender: Female
Race: African American



Name: K. Whigham
Gender: Transgender Female
Race: Caucasian



Name: K. Whigham
Gender: Transgender Female
Race: African American



Appendix E

Profiles Used in Study 5b

First Name:

Katherine (Kate)

Gender:

Female

Age Range:

25-30

Originally from:

Portland, Oregon

Current job:

Pharmaceutical rep

Random fact about myself:

I speak Spanish fluently.

3 things I like about myself:

- 1) I'm very loyal. There is nothing I wouldn't do for a friend.
- 2) I've been told I have a great sense of humor.
- 3) I'll try pretty much anything once.



First Name:

Katherine (Kate)

Gender:

Transgender Female

Age Range:

25-30

Originally from:

Portland, Oregon

Current job:

Pharmaceutical rep

Random fact about myself:

I speak Spanish fluently.

3 things I like about myself:

- 1) I'm very loyal. There is nothing I wouldn't do for a friend.
- 2) I've been told I have a great sense of humor.
- 3) I'll try pretty much anything once.



Appendix E Cont.

Profiles Used in Study 5b

First Name:

Katherine (Kate)

Gender:

Female

Age Range:

25-30

Originally from:

Portland, Oregon

Current job:

Pharmaceutical rep

Random fact about myself:

I speak Spanish fluently.

3 things I like about myself:

- 1) I'm very loyal. There is nothing I wouldn't do for a friend.
- 2) I've been told I have a great sense of humor.
- 3) I'll try pretty much anything once.



First Name:

Katherine (Kate)

Gender:

Transgender Female

Age Range:

25-30

Originally from:

Portland, Oregon

Current job:

Pharmaceutical rep

Random fact about myself:

I speak Spanish fluently.

3 things I like about myself:

- 1) I'm very loyal. There is nothing I wouldn't do for a friend.
- 2) I've been told I have a great sense of humor.
- 3) I'll try pretty much anything once.



Appendix F

Target 1 & Target 2 Used in Study 6



Target 1



Target 2