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Judging Covers by Their Books: Malleable Attractiveness Appraisals in Response to Belongingness Feedback

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A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Psychology

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JUDGING COVERS BY THEIR BOOKS:
MALLEABLE ATTRACTIVENESS APPRAISALS
IN RESPONSE TO BELONGINGNESS FEEDBACK

(Spine title: Attractiveness Appraisals Following Belongingness Feedback)

(Thesis format: Monograph)

by

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Graduate Program in Psychology

A thesis submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

The School of Graduate and Postdoctoral Studies
The University of Western Ontario
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THE UNIVERSITY OF WESTERN ONTARIO
SCHOOL OF GRADUATE AND POSTDOCTORAL STUDIES

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**Judging Covers by Their Books:
Malleable Attractiveness Appraisals in Response to Belongingness Feedback**

is accepted in partial fulfilment of the
requirements for the degree of
Doctor of Philosophy

Date _____

Chair of the Thesis Examination Board

Abstract

The present research examined biases in appraisals of target attractiveness in response to belongingness feedback. Specifically, I hypothesized that individuals would provide favorable attractiveness appraisals of targets who accept them, and would provide unfavorable attractiveness appraisals of targets who reject them. I hypothesized further that biased appraisals would be most pronounced when people received feedback from opposite-sex targets. Two literatures guided the development of the present research. The first literature underscores the power of reciprocal liking – people like those who like them. In mirror fashion, people are highly critical of targets who deny opportunities for social affiliation. The second literature has uncovered that physical attractiveness assessments are subject to influence by nonphysical antecedents. Indeed, the New Look approach to perception argues that top-down processes, such as motivation, color people’s fundamental perceptions of stimuli. In three studies, participants were met with acceptance feedback from an ostensible other, rejection feedback, or neutral feedback. In two of the studies, participants judged rejecting targets as decidedly less attractive than nonrejecting targets. In one study, participants judged accepting targets as more attractive than nonaccepting targets. Although these findings, taken together, were consistent with hypotheses, the effect of belongingness feedback on attractiveness judgments did not differ for opposite-sex versus same-sex targets. Furthermore, the effect appears to be but one component of a general strategy of a rater to uniformly exalt accepting targets and uniformly censure rejecting targets. Study 3 included a face recognition task thought to reflect more directly the outcomes of visual perception. In that study, participants who felt high rapport with accepting opposite-sex targets misrecognized the target as

particularly attractive; participants who felt low rapport with accepting opposite-sex targets misrecognized the target as particularly unattractive. The pattern of results across the three studies suggests that research on appraisals of attractiveness needs to distinguish between subjective judgments of attractiveness and objective perception of attractiveness. I elaborate on additional implications of the present findings, as well as address limitations of the research and discuss promising avenues for future study.

Keywords: Physical attractiveness, reciprocal liking, belongingness feedback, liking feedback, social acceptance, social rejection, The New Look, motivated perception

Acknowledgements

First and foremost, I am tremendously grateful to my advisor, Lorne Campbell, for his patience, support, and guidance over the course of my graduate school career. Lorne is an exceptional role model for an aspiring academic, both in and out of the university setting. That he can juggle a successful academic career with a blossoming family and his many varied interests, such as hockey and meat, is a testament to his talent and dedication. I have thoroughly enjoyed learning from him and will treasure fondly our adventures together in Texas and Tbilisi, particularly the ballet.

I thank my committee members, Sam Paunonen and Dick Sorrentino, for their invaluable suggestions toward improving my dissertation research, including the lessons in grammar. I extend thanks to my other examiners, Clive Seligman, Ross Norman, and Geoff MacDonald for the significant food for thought they provided during my defense. As I progress forward with my research, I will certainly heed the insightful comments and suggestions they put forth.

I am profoundly fortunate to have made such wonderful friends during my second go-around at Western. Thank you to the old school crowd, Antoinette, Alex P., Joanne, Andrew, and Graeme for welcoming me into the social area and for providing such a great sense of community and adventure. I frequently think back to the “good old days.” Thank you to Caroline for her energy, enthusiasm, and support over the years that made grad school not just bearable, but a joy. And I thank her for introducing me to Ethiopian food and for sharing my belief that Jewel and the Gozen spinoff restaurants are the best at their respective crafts. Thank you to Etienne for countless mind-expanding conversations about a range of topics. And he has always been willing to perform huge favors, whether it be changing a tire in subzero temperatures or removing new life forms from my fridge

and I am so very grateful for that eagerness to help. Same to Paul, who has risked life and limb in helping me on more than one occasion. Moreover, Paul's unbounded optimism and ability to see the good in everyone have been so helpful in looking forward to a bright future. Thank you to the dissertation boot camp soldiers, Sandra and Paula, for ensuring that I finally wrapped up! Sandra has been just about the best officemate I could possibly hope for. Even if our numerous in-office chats set us back a couple of years, I wouldn't do anything differently if I had to do it all over again! Thank you to Alex MS, Tim, and Irene for helping me get into shape! I hope there are still a few more hot showers in our future. Irene's presence at school really does exponentially increase my positive mood and I am grateful for that boost when I am fortunate enough that she makes the trip in. And I am deeply appreciative of Alex's humor, compassion, and support. Whether it's chatting for a couple of hours over coffee or for five minutes following a workout, I always leave interactions with her in an inspired, upbeat mood. As such, I will always smile when I think of gum, menstrual cycles, or speedometers.

And to my family, I owe incalculable gratitude for their support and patience as I continued with school well into my 30s! Thank you so very much for providing me with a haven whenever I've needed it and for doing so many little things along the way that allowed me to focus on completing my education. It has been such a blessing to have my parents and extended family close by over the years and I will look forward to future reunions with great excitement! I love you all.

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CHAPTER 1: INTRODUCTION

“How beautiful you are, now that you love me.”

-Marlene Dietrich (1901-1992)

When we are consumed by the enchantment of love, we exceedingly extol the virtues of our partners, evaluating them as more praiseworthy than they evaluate themselves (Murray, Holmes, & Griffin, 1996). Even at the earliest stage of relationship or acquaintanceship development, simply learning that another person likes us engenders a favorable response toward that person in return (Kenny, 1994). In mirror fashion, being rejected by another person can precipitate condemnation of that person’s entire character (Leary, Twenge, & Quinlivan, 2006). Because human beings have a fundamental need to form close, meaningful relationships with other people (Baumeister & Leary, 1995), we are acutely sensitive to belongingness feedback, producing responses that facilitate bonding with targets who appear to accept us, and reserving hostile intent for those who deny our belongingness needs. The present research investigated whether this tit-for-tat propensity – uniformly praising targets who offer acceptance and uniformly lambasting targets who are rejecting – also operates more specifically at the level of attractiveness appraisals;¹ that is, do we unduly evaluate accepting targets as attractive, and rejecting targets as unattractive?

Biases in assessments of others’ attractiveness should operate most strongly when belongingness feedback from others carries romantic implications. Although classic research on human mate preferences suggests that men, more than women, value

¹ Throughout the paper, I generally use the terms “appraisal” or “assessment” as catch-all terms to represent both explicit ratings of attractiveness and visual perception of attractiveness. I use the term “judgment” specifically to represent a deliberate, explicit rating of attractiveness. I reserve the term “perception” to refer to actual visual perception of attractiveness. Most prior research on nonphysical antecedents of attractiveness appraisals has used these terms more or less interchangeably, though judgments of stimuli do not necessarily correspond to perceptions of those same stimuli.

prospective partners' physical attractiveness (e.g., Buss, 1989; Feingold, 1992; Hill, 1945; Li, Kenrick, Bailey, & Linsenmeier, 2002; Sprecher, Sullivan, & Hatfield, 1994), research examining people's actual mate choices reveals that both men and women are swayed by potential partners' physical appeal (Eastwick & Finkel, 2008; Luo & Zhang, 2009). People's explicitly articulated preferences for most traits are poor predictors of their romantic partner selections. Instead, Eastwick and Finkel (2008) observed that feelings of mutual rapport, or in lay terms, "chemistry," more strongly predict romantic partner choices. Perhaps chemistry, or a lack thereof, entails biased appraisals of a target's physical attractiveness after inferring whether the target is displaying romantic interest. Accordingly, the present research examined whether assessments of target attractiveness are most distorted when heterosexual individuals receive belongingness feedback from opposite-sex targets.

In developing my hypotheses, I first review research that convincingly suggests that, when people feel liked by others, they generally respond favorably toward those others. Whether liking (or disliking) feedback can bias appraisals of attractiveness more specifically remains an open question. I then catalog the objective features thought to contribute to physical attractiveness, maintaining, however, that assessments of attractiveness are influenced by both the objective features of the target and the needs of the perceiver. This argument segues into a discussion of past research that has accumulated evidence for nonphysical influences on physical attractiveness assessments, and is followed by an elaboration of the "New Look" approach to understanding the joint influence on perception of top-down psychological constructs and bottom-up sensory and neural architecture.

The last section of the Introduction makes a distinction between *judgments* of attractiveness, consisting of deliberate ratings that may or may not correspond to what one actually sees, and *perceptions* of attractiveness, which more purely reflect the outcomes of vision. I note that prior research showing nonphysical antecedents of attractiveness appraisals has not incorporated measures of visual perception. With the distinction between judgments and perceptions made clear, I then present findings from three studies: two of which examined judgments of attractiveness following belongingness feedback and the last of which examined both judgments and perceptions. In the General Discussion, I review the present findings, discuss their theoretical and practical implications, and address limitations of the current set of studies, offering suggestions for future research that can further contribute to comprehending the effect of belongingness feedback on physical attractiveness appraisals.

Liking Begets Liking

Classic research in social psychology has revealed that others' liking exerts a profound influence on people's attitudes toward those others (e.g., Backman & Secord, 1959; Condon & Crano, 1988; Eastwick, Finkel, Mochon, & Ariely, 2007; Kenny & La Voie, 1984; Luo & Zhang, 2009; Sprecher, 1998). A reciprocal liking phenomenon exists whereby we overwhelmingly like those who like us. Reciprocity of liking is extended even by those who apparently have low liking for themselves (Deutsch & Solomon, 1959; Vonk, 2002) and is such a pervasive occurrence that it is commonly listed as one of the fundamental precipitators of interpersonal attraction, along with proximity, familiarity, similarity, and physical attractiveness (e.g., Berscheid & Regan, 2005).

Liking reciprocity is perhaps the most potent of the antecedents of interpersonal attraction. A study by Condon and Crano (1988) demonstrated that inferred liking predicts reciprocal liking more precisely than does attitude similarity. Condon and Crano led participants to believe that they either shared or did not share similar attitudes to an ostensible second participant on several topics, borrowing from Byrne's (1971) classic paradigm. Furthermore, participants were either told that they were evaluated favorably by this other person or were not given such information. Although both attitude similarity and evaluation influenced participants' liking for the ostensible other, the effect of attitude similarity was greatly diminished when controlling for inferred liking. Conversely, the effect of evaluation remained significant when controlling for inferred similarity.

Kenny, Bond, Mohr, and Horn (1996) examined third-party meta-perceptions of liking; that is, can person A accurately decode whether person B likes person C? When meta-perceivers relied on a simple generalized reciprocity heuristic – rating B to like everyone after learning that everyone likes B – their predictions concerning reciprocal liking between two specific people were relatively inaccurate. When meta-perceivers relied on a more precise dyadic reciprocity heuristic – rating B to like C after learning that C likes B in particular – their resulting predictions of reciprocal liking between two people were highly accurate. In a similar vein, when individuals rate others with whom they personally interact in a speed dating environment, they indicate greater desire for targets who particularly liked them, but not for targets who indiscriminately liked everyone (Eastwick et al., 2007). In short, these studies underscore the potency of dyadic

reciprocal liking – if William especially likes Katherine, one can conclude with near certainty that Katherine will like William in return.

In the present research, I examined whether being accepted or rejected by a target results in tit-for-tat responding: appraising the attractiveness and personality of accepting targets in a particularly favorable light, and appraising the attractiveness and personality of rejecting targets in a particularly unfavorable light. Furthermore, it stands to reason that belongingness feedback should influence assessments of a target's attractiveness in particular. People might prefer seeing potential affiliates as attractive given that people are rated as more attractive when they are in the company of good-looking same-sex friends (Kernis & Wheeler, 1981).

A target's liking is a powerful precipitator of romantic relationship formation and individuals might see potential romantic partners as especially more or less attractive in response to belongingness feedback. To elaborate, Sprecher (1998) asked participants to rate the importance of various factors in the development of attraction toward their current romantic partners and close friends. Across three studies, learning of another's liking was rated as among the most influential variables causing attraction, along with the other's personality, the other's warmth and kindness, and unique qualities particular to the other person. Learning of another's liking was rated as more influential than similarity to the other person, consistent with the findings of Condon and Crano (1988). Moreover, learning of another's liking was rated as an especially strong impetus in the development of romantic relationships in comparison to the development of platonic friendships. Aron, Dutton, Aron, and Iverson (1989) likewise observed that reciprocal

liking uniquely precipitated the experience of “falling in love,” but not “falling in friendship.”

Receiving a partner’s positive regard promotes bonding among newly committed romantic couples. Individuals who believe that they have low standing on a desirable trait (e.g., extraversion) experience greater intimacy with their partners when their partners judge them positively on that trait (Campbell, Lackenbauer, & Muise, 2006; Swann, de la Ronde, & Hixon, 1994). This finding contradicts the basic tenet of self-verification theory (Swann, 1983) which states that people strive to be perceived accurately by others out of a need for predictable and controllable interpersonal outcomes. Only after relationships become more established do individuals begin to feel comfortable with partners who uphold their negative self-views, suggesting that unadulterated adoration is essential to the early progression and burgeoning of romantic relationships.

In sum, a wealth of research employing a variety of paradigms concludes that liking begets liking and precipitates the experience of falling in love. To date, however, empirical studies have yet to examine whether liking (or disliking) feedback begets distorted assessments of attractiveness more specifically. The early stages of romantic relationships are characterized by intense feelings of passion, and conceptualizations of passionate love typically emphasize sexual desire as a central component of the experience (e.g., Berscheid, 1988; Hatfield, 1988). Physical attraction and sexual desire are key variables that separate romantic yearning from platonic liking. Given that reciprocal liking guides the early development of romantic unions, a plausible mechanism through which this development might unfold is via the perceiver’s enhanced appraisals of the love interest’s physical attractiveness. Conversely, if a prospective partner appears

uninterested, downgraded appraisals of the partner's attractiveness should ensue to facilitate avoidance of the uninterested party.

The Constituents of Physical Attractiveness

Although a common maxim dictates that beauty is in the eye of the beholder and thus might be subject to influence by belongingness feedback, a large body of research has delineated the objective physical features that contribute to global assessments of physical attractiveness. For example, Cunningham (1986) observed that women's attractiveness is correlated with the appearance of neotonous and expressive features (e.g., large eyes and a wide smile). The neotonous feature of large eyes contributes to men's attractiveness as well, but mature features, such as prominent cheekbones and a large chin also largely predict men's attractiveness (Cunningham, Barbee, & Pike, 1990). Evolutionary psychologists have made similar observations, showing that women find masculine features (e.g., broad shoulders, a strong jawline) to be particularly attractive, whereas men are attracted to features indicative of youth and fertility (see Sugiyama, 2005, for a review).

In addition to specific facial features, emotional expressions also contribute to assessments of attractiveness, with different emotions being differentially predictive of men's versus women's attractiveness. For example, Tracy and Beall (in press) recently observed that men are especially attracted to women displaying happiness, whereas women are especially attracted to men displaying pride. Happy men and proud women were considered relatively unattractive. Tracy and Beall's (in press) findings fit nicely with Cunningham's (1986; Cunningham et al., 1990) research showing that soft, expressive features (e.g., large eyes and a wide smile) largely predict women's

attractiveness, whereas strong features (e.g., prominent cheekbones and a large chin) largely predict men's attractiveness.

Symmetry of both the face and body is perhaps the most consequential physical feature influencing attractiveness judgments. Symmetry implies normal development and good health and has thus been found to predict both men's and women's attractiveness (Gangestad, Thornhill, & Yeo, 1994; Thornhill & Gangestad, 1994). Symmetry is especially predictive of men's attractiveness as short-term sexual partners as it is thought to function as an indicator of genetic quality, on which women place a premium when pursuing a risky uncommitted sexual liaison (Penton-Voak et al., 1999).

Undeniably, objective qualities contribute to variation among individuals in physical attractiveness. But perception is a process involving both a stimulus being perceived and an active perceiver (Gibson, 1979). To facilitate approach or avoidance of social targets, one might expect individuals' appraisals of targets' attractiveness to be subject to feedback from the targets. For instance, if Angelina acts cold and distant in interactions with Brad, it may be adaptive for Brad to find Angelina less attractive so that he avoids wasting effort in pursuing her as a potential mate. Prior research has largely ignored whether appraisals of target attractiveness change specifically in response to belongingness feedback, although Lydon, Meana, Sepinwall, Richards, and Mayman (1999) studied whether interest expressed by an attractive, available target would influence attraction toward the target by participants in romantic relationships. Participants in that study who were highly committed to their current relationship reported lower levels of attraction to the target than did less committed participants.

In the Lydon et al. (1999) study referred to above, participants did not expect to meet the target. In contrast, the present research explored the effect of both liking and disliking feedback provided by targets whom participants expected to meet. Thus, the present set of studies provided a more complete test of the effect of belongingness feedback on assessments of target attractiveness. These studies draw from various lines of inquiry that have catalogued various nonphysical antecedents of altered physical attractiveness judgments.

Nonphysical Antecedents of Attractiveness Judgments

A burgeoning body of research reveals that attractiveness appraisals are sensitive to nonphysical information, such as knowledge of a target's personality. The seminal study in this body of work demonstrated that participants judged targets who possessed more desirable personalities to be more physically attractive than targets who possessed less desirable personalities – a “what-is-good-is-beautiful” effect (Gross & Crofton, 1977). Gross and Crofton's (1977) results complemented the previously documented “what-is-beautiful-is-good” phenomenon whereby attractive people are ascribed more positive attributes than are less attractive people (Dion, Berscheid, & Walster, 1972). Other studies have subsequently replicated the what-is-good-is-beautiful effect, adding important controls and suggesting that specific character traits such as honesty and kindness are chiefly responsible for the effect (Hassin & Trope, 2000; Lewandowski, Aron, & Gee, 2007; Paunonen, 2006).

Additional studies have focused attention on different sorts of cues people might use, beyond information about the target, in arriving at attractiveness judgments. One such cue is the evaluations others have made concerning the target. Graziano, Jensen-

Campbell, Shebilske, and Lundgren (1993) provided participants with information on how targets' attractiveness was rated by others before participants completed their own ratings. Women were particularly swayed by negative information, rating photographs as less attractive when the photographs were paired with unflattering ratings made by others. Men were not particularly influenced by peer ratings, except in their rating photographs of attractive women as especially attractive when these photographs were coupled with positive reviews from other men.

Hill and Buss (2008) examined how targets' attractiveness and desirability are influenced by the interpersonal context in which the target is observed. They reasoned that people save time and energy in mate assessment by heuristically inferring desirability of targets from interactions targets have with others. Because men's overall mate value is not readily perceived from appearance cues alone, women might decode that value, including their attractiveness, from men's social company. Men surrounded by women presumably possess qualities that women find admirable, and thus female perceivers might judge men in such contexts to be more attractive and desirable than men who are alone or in the company of same-sex peers. Women's mate value, on the other hand, is more directly related to physical appearance, and thus men gain less information about women's mate value from women's interactions with others. Instead, women surrounded by other men might be judged as less attractive by male perceivers than women who are alone or with same-sex peers due to the potential cost of wasted effort in pursuing women who are romantically unavailable. Hill and Buss (2008) asked participants to rate the attractiveness and desirability of men and women in various interpersonal contexts and confirmed the hypothesized sex differences. Jones, DeBruine, Little, Burriss, and

Feinberg (2007) likewise observed that women rated men as more attractive when photographs of the men's faces had previously been paired with smiling female faces, suggesting again that women incorporate other women's assessments when appraising the attractiveness of male targets.

In addition to revealing the conditions under which attractiveness judgments are labile, researchers of interpersonal attraction have also sought to identify mechanisms through which these changes might occur. A series of classic studies by Dutton and Aron (1974) demonstrated that people attribute generalized arousal to romantic attraction, even if the arousal was induced by a frightening situation. In a related vein, motivation for romantic union can bias judgments of prospective partners. Bar patrons rated the attractiveness of members of the opposite sex more favorably as closing time drew near than they did at earlier points in the evening, presumably because the risk of going home alone became more apparent as the night wore on (Pennebaker et al., 1979).

Whereas Dutton and Aron (1974) and Pennebaker et al. (1979) examined facilitators of enhanced attractiveness judgments of others more generally, Paunonen (2006) conducted a study to explicate the process by which people arrive at attractiveness judgments for specific targets, based on the targets' particular attributes. Paunonen (2006) presented participants with a personality description of a target, conveying information about target intelligence, independence, and honesty. Honest targets were rated as more attractive than dishonest targets and this effect was mediated by the extent to which participants liked the targets. Paunonen (2006) also examined ratings of the targets' specific physiognomic features as a function of target personality and revealed that judgments of these features were also altered by the honesty manipulation. For

example, honest targets were judged to have finer hair and a more graceful neck than were dishonest targets. Paunonen's (2006) findings are significant because they imply that liked targets might be rated as more attractive because of actual shifts in the perception of particular physical features (see also Hassin & Trope, 2000, Study 6). The present research builds upon those findings by examining liking from a different angle; that is, whether a target's liking for an individual exerts an influence on that individual's assessment of the target's attractiveness.

A "New Look" at Biases in Perceptions of Attractiveness

Prior research has firmly established that learning of another's liking is a powerful elicitor of reciprocated liking (e.g., Backman & Secord, 1959; Condon & Crano, 1988; Eastwick et al., 2007; Kenny & La Voie, 1984; Luo & Zhang, 2009; Sprecher, 1998). Other lines of research have revealed that judgments of targets' physical attractiveness are labile in response to nonphysical sources of information (e.g., Graziano et al., 1993; Gross & Crofton, 1977; Paunonen, 2006). The present research wed these two lines of inquiry to test whether belongingness feedback from a target not only predicts liking or disliking in kind, but specifically influences judgments and perceptions of that target's physical attractiveness.

Past research on the malleability of physical attractiveness appraisals has proceeded largely in the absence of an overarching theoretical framework. The present analysis redressed this limitation by applying a classic theoretical approach – the "New Look" (Bruner & Minturn, 1955) – to explain why changes in perceptions of attractiveness should occur in response to belongingness information. The New Look approach to perception surfaced in the late 1940s to assert that conscious perceptions are

not merely a replica of the external environment; rather, perceivers' internal states act as lenses through which external reality is filtered. Internal states include motivation, needs, values, and expectancies, and other higher-order psychological constructs that exert a "top-down" influence on sensory information stemming from "bottom-up" sources, which include the preconscious workings of the sensory organs and nervous system (Bruner & Goodman, 1947; Bruner & Postman, 1947; Postman & Bruner, 1948; Postman, Bruner, & McGinnies, 1948). Thus, the perceptions that reach conscious awareness are jointly determined by top-down and bottom-up processes.

Before the rise of the New Look, perception was believed to reconstruct more or less accurately the inherent properties of the external environment. New Look advocates, however, argued that the purpose of perception is to reproduce a meaningful environment in which attention to and recognition of objects relevant to one's goals and beliefs are facilitated to allow for efficient interaction with one's environment. The New Look can be applied to the present research to suggest that learning of another's interest or lack of interest instills a motivation to see quite literally that other's physical appearance as more or less attractive, in order to facilitate approach or avoidance.

In a classic study to adduce preliminary support for the New Look hypotheses, Bruner and Goodman (1947) instructed ten year old boys to estimate the size of various coins and discs by adjusting the size of a light beam through use of a special apparatus. The boys asked to estimate the size of cardboard discs were quite accurate in doing so, but the boys asked to estimate the size of coins provided gross overestimates. The bias in estimation was more pronounced for coins of higher value, and interestingly, the bias was even stronger among a group of children from a poor socioeconomic background. Thus,

units of currency appeared physically larger because of the value people ascribe to money. And when the need for money was particularly strong, as was the case for underprivileged children, the appearance of coins was even more exaggerated.

Other experiments performed by Bruner and his colleagues (Bruner & Postman, 1947; Postman et al., 1948) conceptually replicated Bruner and Goodman's (1947) findings by showing that participants' perceptions of rapidly presented words and phrases were also influenced by their values and needs. Postman and Bruner (1948) provided further evidence for the influence of motivation on perception by demonstrating that thwarting perceptual goals results in haphazard and frantic attempts to restore proper goal pursuit. Individuals led to believe that their initial perceptions of a subliminally-presented picture were invalid subsequently experienced difficulty recognizing three-word phrases presented just below conscious threshold. Failure on the picture recognition task caused participants to harbor doubts concerning the veridicality of their perceptions, and participants compensated on the phrase recognition task by prematurely guessing the words they were seeing, rather than taking the time to be certain about what they were seeing. In this way, perceptually thwarted participants behaved like an individual panicking to find her keys – the individual starts to see any remotely similar objects as the missing set of keys, and thus fails to notice the sought-after object right under her nose!

Based on the preliminary findings of the New Look approach, New Look advocates exhorted biological and cognitive psychologists to reconcile the physical laws of perception with the distorting influences enacted by higher-order, top-down processing. Despite the initial promise offered by the New Look, critics quickly

denounced the research, maintaining that more parsimonious accounts could explain New Look phenomena (e.g., Erdelyi, 1974; McCurdy, 1956; Wohlwill, 1966). For example, poor children could have overestimated the size of coins because they had limited experience with money or because their representation of coins in memory was less vivid (McCurdy, 1956). As the cognitive revolution, with its emphasis on “cold” information processing, gripped psychology in the 1960s and 1970s, the specific New Look supposition that motivation influences perceptual processing fell further out of favor. In fact, several motivational accounts of classic social psychological phenomena, including cognitive dissonance, the fundamental attribution error, and self-serving biases were recast as cognitive artifacts (Miller & Ross, 1975; Nisbett & Ross, 1980).

As motivation has once again moved to the forefront of psychological study (Sorrentino & Higgins, 1986), New Look ideas have been echoed as part of emerging theoretical perspectives. Gibson’s (1979) ecological theory of perception argued that “perception is for doing;” that is, perception serves to balance the needs and desires of the perceiver with the objective reality of the external environment. Similarly, Proffitt’s research on embodied perception and the economy of action (see Proffitt, 2006, for a review) reveals that people deem the environment to be more physically demanding when the costs of navigating the environment are high. For example, participants wearing a heavy backpack estimate walking distances to be longer (Proffitt, Stefanucci, Banton, & Epstein, 2003) and hills to be steeper (Bhalla & Proffitt, 1999), compared to unencumbered participants. These biased estimates are adaptive in promoting energy conservation when undertaking physical tasks could tax the body’s energy reserves.

In recent years, perspectives with their roots entrenched in the New Look philosophy have emerged to buttress the original New Look tenet that perceptions are partly determined by individuals' internal states. In social psychology in particular, several findings are tacitly consistent with New Look propositions. In the realm of prejudice and stereotyping, individuals high in implicit prejudice more readily perceive anger in Black faces than in White faces (Hugenberg & Bodenhausen, 2003). Similarly, participants instructed to "shoot" armed targets in a mock video game are more likely to mistakenly shoot Black targets holding innocuous objects than White targets holding innocuous objects, presumably because of consensual stereotypical beliefs linking Blacks to violent crime (Correll, Park, Judd, & Wittenbrink, 2002). In the arena of interpersonal relationships, people informed that they are at risk of living a lonely life exhibit a reduced sensitivity to physical pain, apparently as part of a temporary defense mechanism for protecting individuals from the sting of social exclusion (DeWall & Baumeister, 2006). Balcetis and Dunning (2006, 2007, 2010a) have revived the New Look more directly in their studies on motivated perception. In an initial set of studies, Balcetis and Dunning (2006) informed participants that they would be randomly assigned to perform desirable or aversive tasks (e.g., drinking orange juice vs. drinking a noxious vegetable smoothie), and that this assignment would depend on which of two categories of stimuli were shown to participants on a computer screen (e.g., a farm animal vs. a sea creature). The critical stimulus was always ambiguous in nature, in that it could be perceived as belonging to either category (see Figure 1). Balcetis and Dunning (2006) observed that participants typically reported seeing the stimulus as belonging to the category that would result in the more desirable outcome. Participants' motivation to gain favorable outcomes and avoid

unfavorable outcomes, the authors argued, influenced their perceptions of ambiguous stimuli. Analyses of lexical decision-making data and eye saccades demonstrated more conclusively that participants' perceptions had indeed changed and that they were not simply lying to the experimenter about what they saw in order to gain the desired outcome. In fact, in Balctis and Dunning's (2006) Study 5, the experimenter notified participants *after* they had viewed the critical stimulus that the category-task assignment was actually the reverse to what they were first told. Yet participants still reported having seen what they would have wanted to see at the time of the stimulus presentation, suggesting that online visual perception was indeed distorted by motivation.

Figure 1

Ambiguous Horse-Seal Figure Used to Assess Motivated Perception



Note. This figure was reproduced from Figure 2 in Balctis & Dunning (2006).

Balcetis and Dunning have since examined perceptions of the natural environment and how these perceptions are distorted by motivational influences. In one series of studies (Balcetis & Dunning, 2007), participants were asked to perform embarrassing or arduous tasks while navigating their environment (e.g., traversing a section of campus while wearing a costume resembling a Carmen Miranda outfit). Participants were given the semblance of free choice to do these tasks or were ordered to do so. Participants in the free choice conditions estimated the physical parameters of the environment to be less demanding than did participants in the no choice condition, presumably because they were motivated to rationalize their free choice to perform an aversive task and did so by perceiving the environment as less challenging. In a related series of studies, Balcetis and Dunning (2010a) manipulated desire for various objects and examined how this desire influenced perceptions of the environment. Generally speaking, participants asked to estimate their distance to desired objects rated those objects as closer than did participants asked to estimate their distance to undesired objects.

Judgments versus Perceptions

A core tenet of the New Look philosophy is that fundamental sensory experience is a function of not only the body's basic biological properties, but is also determined by top-down psychological constructs which comprise needs, expectations, and values, among other things (see Balcetis & Dunning, 2010b, for a review). Much of the recent research inspired by the New Look offers evidence for the confluent determination of visual perception by manipulating a top-down construct (e.g., motivation) and measuring the resulting systematic perceptual bias using procedures that directly reflect visual

perception (e.g., percept switching when viewing optical illusions, Balcetis & Dunning, 2006; visually-guided estimates of hill slant, Bhalla & Proffitt, 1999).

Research on malleability of physical attractiveness assessments, though derived from similar logic, has yet to adopt procedures for directly tapping visual *perception* of attractiveness. Instead, that research has exclusively relied on *judgments* of attractiveness, commonly requiring participants to rate a target's attractiveness on a Likert-type scale. Though perceptions and judgments of physical characteristics are presumably related, in that people will judge physical properties in line with what they visually perceive, they need not exhibit a one-to-one correspondence. To illustrate, research on patients with visual agnosia has revealed that patients can orient their hands perfectly well when performing the action of placing a card into a slot, yet cannot verbally report the slot's orientation or mimic the orientation with their hands in the absence of performing the action (Goodale, Milner, Jakobson, & Carey, 1991; Milner et al., 1991). Those patients, at some level, then, can perceive stimuli, resulting in appropriate movements, but lack explicit awareness (or judgment) of stimulus features. In reviewing research on one particular neuropsychological patient (D.F.), and on healthy participants more generally, Westwood and Goodale (2011) concluded that visually-guided action is largely distinct from conscious awareness of objects' form.

Proffitt (2006) reviewed evidence to suggest that explicit judgments of environmental parameters tend to be biased by the availability of physiological resources; the magnitudes of long distances and steep hills, for example, are often exaggerated to promote economy of action. Once the body is in motion, however, visually-guided perception of environmental parameters is highly accurate to ensure proper navigation of

the terrain. *Judgments* of environmental features are biased to help the individual decide on proper courses of actions (e.g., “that hill looks mighty steep, maybe I should take another route”), but visual *perceptions* of the surrounding environment during ongoing action are accurate so that navigation of the landscape proceeds smoothly.

Research on neuropsychological patients and on perception of natural environments suggests that what people actually see does not necessarily map onto what they report seeing; that is, perceptions do not necessarily correlate with judgments of perceptions. More broadly, explicit judgments in any domain incorporate a wider array of information that can result in dissociations between judgments and initial inclinations. The nature of judgments made in social psychological research commonly requires participants to answer questions by selecting one of several response options. Strack and Martin (1987) contend that such judgments involve a deliberative process of interpreting the question, generating an answer, formatting the answer to map onto one of the response options, and editing the response in light of other considerations (e.g., social desirability). Thus, the judgment ultimately produced might not entirely reflect one’s initial inclination. Similarly, Gawronski and Bodenhausen’s (2006) Associative-Propositional-Evaluation (APE) Model describes how mental associations are automatically activated upon encountering a stimulus, but that explicit evaluations or judgments draw on broader sources of information that can serve to reinforce the activated associations or to reject them as a basis for judgment. Returning to Proffitt’s (2006) research on the economy of action, visual perception of the environment can be likened to automatically activated associations or inclinations. Explicit judgments of environmental features surely rely on visual input, but are also informed by appraisals of

the physiological potential needed to traverse the environment. These appraisals might steer the explicit judgments away from the true percept, just as broad sources of information often steer judgments away from one's automatic inclinations.

In light of converging streams of evidence revealing dissociations between perceptions and judgments, prior research on the malleability of physical attractiveness assessments should be reexamined. Gross and Crofton (1977), Hassin and Trope (2000), Lewandowski et al., (2007), and Paunonen (2006) have all shown that participants judge targets to be more physically attractive when they believe targets to possess virtuous qualities. Those research programs, however, required participants to rate target physical attractiveness using Likert-type scales, a form of judgment, and did not employ measures of visual perception. The systematically biased judgments made in those studies certainly might reflect systematic biases in perception; indeed, participants in Hassin and Trope's (2000) and Paunonen's (2006) research also rated the targets' specific physiognomic features differently as a function of supplied trait information. But the biased judgments might also reflect the operation of other principles. For example, participants' judgments might have been guided by a politeness norm mandating that virtuous, upstanding individuals should be responded to in a positive manner, which could have inflated attractiveness judgments even in cases when actual perceptions remained unchanged. Similarly, prior observations that peer evaluations influence people's assessments of target physical attractiveness (e.g., Graziano et al., 1993) might be explained by participants application of a deliberate strategy whereby they incorporate others' beliefs into their own judgments, even if participants were not actually seeing the target differently as a function of peer evaluations.

The previous research on nonphysical antecedents of physical attractiveness assessments describes how the appraisal of physical attractiveness is not as objective as some might believe – to an extent, beauty is the eye of the beholder. The present research sought to extend that seminal work by exploring the role of one antecedent factor that should be a particularly potent elicitor of biased physical attractiveness assessments: belongingness feedback supplied by a target. The present studies followed closely from previous research by examining whether people’s judgments of target attractiveness are influenced by target liking, while also assessing whether judgments of a target’s entire character more broadly are influenced by target liking in tit-for-tat fashion. To evaluate the more specific hypothesis that liking feedback impinges on actual visual perception, the third study of the present research included a dependent measure, used in research on perceptual self-enhancement (Epley & Whitchurch, 2008), that more closely reflects the outcomes of visual perception.

The Present Research

The New Look appears to be gaining traction once again in psychological research. Its supposition that our perceptions are influenced by internal states has been repeatedly borne out in studies of the natural environment (e.g., Balcetis & Dunning, 2007, 2010; Bhalla & Proffitt, 1999; Proffitt et al., 2003; Stefanucci & Proffitt, 2009). Additionally, social psychology’s rich history of biases in social perception has tacitly been informed by the New Look (e.g, Correll et al., 2002; DeWall & Baumeister, 2006; Hugenberg & Bodenhausen, 2003; Maner et al., 2005; Simpson, Gangestad, & Lerma, 1990). Most of this prior work, however, has examined individuals’ perceptions of ambiguous stimuli. For example, participants report their percepts of optical illusions,

make estimates of physical parameters that cannot be precisely computed by the human mind, or discern as rapidly as possible the attributes of target stimuli. The present research, in contrast, explored whether people's appraisals of relatively unambiguous stimuli – human faces – can be influenced by motivation to see a target in a particular way. Past research has revealed that judgments of physical attractiveness are malleable in response to nonphysical pieces of information (e.g., Gross & Crofton, 1977; Lewandowski et al. 2007; Paunonen, 2006). That research, however, has proceeded without the aegis of a theoretical framework. The New Look approach predicts that when people expect or are motivated to see a stimulus in a particular light, as might be the case when learning of a prospective mate's interest or lack thereof, they should evaluate targets in a manner confluent with their desires.

The current series of studies tested the notion that appraisal of a target's attractiveness is partly dependent on whether the target expresses an interest in the perceiver. Based on research on the reciprocity of liking (e.g., Backman & Secord, 1959; Condon & Crano, 1988; Eastwick et al., 2007; Kenny & La Voie, 1984; Luo & Zhang, 2009; Sprecher, 1998), I predicted that targets who provided acceptance feedback to participants would be judged or perceived as more attractive than would targets who provided indifferent or ambiguous feedback. I also predicted that targets who provided rejection feedback to participants would be judged or perceived as less attractive than would targets who provided indifferent or ambiguous feedback.

Three studies were included to test the aforementioned hypotheses. Study 1 provided an initial test of whether a target's liking for an individual influences the individual's construal of the target's attractiveness by examining judgments of opposite-

sex targets following belongingness feedback. Study 2 followed closely from Study 1, but included a same-sex target condition to test whether malleability in attractiveness judgments is most pronounced in opposite-sex contexts. In addition, Study 2 used belongingness-irrelevant control targets to ascertain whether distorted assessments of attractiveness are specific to targets who provide belongingness feedback and do not generalize to targets with irrelevant implications for belongingness. Such specificity would reveal that being met with acceptance or rejection impels individuals to see only the bearer of the belongingness feedback in a different light, rather than instilling an indiscriminate tendency to bias assessments of any subsequently encountered target. Study 3 examined perceptual bias more directly by testing whether participants' ability to select a target's face accurately from a series of distractor images was affected by belongingness feedback. In Study 3, participants viewed a face of the target before receiving feedback and were later asked to select the target's face from a series of similar-looking distractors. All three studies additionally involved participants rating targets providing belongingness feedback on a host of personality traits to examine whether biased attractiveness appraisals are simply one component of a broader tit-for-tat strategy for praising accepting targets and condemning rejecting targets.

Studies 1 and 2 presumed that belongingness feedback would motivate participants to shift their appraisals of target attractiveness. But belongingness feedback should have maximum impact when it comes from somebody whom the individual really likes. Accordingly, Study 3 included a direct measure of the rapport participants felt with the target before they received the belongingness feedback in order to ascertain whether

feelings of rapport are the specific motivational impetus for biasing appraisals of target attractiveness following the feedback.

The three studies of the present research involved a similar methodology. Participants were led to believe that they would have an opportunity to work with another participant in a later phase of the study, and that the decision to work together or to work alone would be made by the other person after he or she had ostensibly reviewed written information provided by the actual participant. The conveyance of the other person's ultimate decision constituted the feedback manipulation, with the ostensible other expressing interest in meeting the target (acceptance), a lack of interest in meeting the target (rejection), or providing indifferent or ambiguous feedback (control). The attractiveness and trait judgments in all three studies and the face recognition task in Study 3 followed after receiving notice of the ostensible other's decision. The three studies also included various measures and controls to test the nature and specificity of the hypothesized effects.

CHAPTER 2: STUDY 1

Overview and Hypotheses

The purpose of Study 1 was to adduce preliminary evidence that belongingness feedback provided by an opposite-sex target influences judgments of the target's physical attractiveness. To this end, each participant was informed that his or her answers to certain questions would be provided to an ostensible second participant of the opposite sex, who would review these answers and subsequently determine whether he or she would like to meet the real participant. After receiving the other's decision, the participant proceeded to view a photograph of the target's face and rate his or her physical attractiveness. Participants also rated several physiognomic features of the target to gather tentative evidence that specific perceptions of faces change as a function of belongingness feedback and rated the target's personality.

I hypothesized that participants would rate targets who supplied acceptance feedback as more physically attractive than targets who expressed indifference. In addition, I hypothesized that participants would rate targets who gave rejection feedback as less physically attractive than indifferent targets.

Method

Participants

Seventy introductory psychology students participated in the present study in exchange for course credit. Data from 6 homosexual participants were excluded from analyses, leaving a final sample of 64 participants (43 women, 21 men). Nearly half of the included participants (43.8%) identified themselves as Caucasian, 20.3% identified themselves as Chinese, and the remainder identified as belonging to another ethnic

group.² Participants' mean age was 18.3 years old, ($SD = 1.30$). Nineteen participants (29.7%) reported involvement in a romantic relationship at the time of participation.

Procedure

Participants completed the study in individual sessions and were given the cover story that they were taking part in a study examining the processes involved in getting to know other people. Upon arriving at the laboratory, an experimenter greeted participants and instructed them to place their personal effects in a room containing a backpack purportedly belonging to another participant who had arrived earlier. The experimenter then seated participants at a computer in an individual testing room. The experimenter asked them to read a letter of information detailing the study and to sign the consent form if they agreed to participate. The experimenter subsequently explained to participants that they had been paired with an opposite-sex participant and that the two parties would be exchanging different types of information (e.g., written statements vs. photographs) and completing ratings of one another. The experimenter also noted that the participant would either work alone or with the other participant on a jigsaw puzzle as the last task in the study. Participants were told that instructions for the various tasks would be presented on the computer and were then left alone to begin the study.

Participants were first prompted to provide some demographic information on the computer. The computer program then informed them that they would be randomly assigned to either the role of an *advertiser* or a *selector* and that a screen would follow in a few seconds to notify them of their assignment. In actuality, all participants were

² For all three studies reported herein, attractiveness appraisals provided by Caucasian versus non-Caucasian participants did not differ significantly, all $F_s < 2.06$, all $p_s > .15$.

assigned to the advertiser role and upon being informed of this assignment, they were prompted to alert the experimenter as a means of bolstering the cover story.

As advertisers, participants answered three open-ended questions (see Appendix A), with their answers allegedly sent electronically to the other participant (the selector) for review. As a means of inducing a subtle romantic context, these questions were selected from a popular dating website (www.eharmony.com) to represent the types of questions people might pose to casual dates. Participants were allotted 90 seconds to answer each question; after 90 seconds had passed, the question disappeared and the next question was immediately presented on the computer screen. The selector ostensibly reviewed the advertiser's answers to decide whether he or she wished to work with the advertiser on the later jigsaw puzzle task or would prefer to work alone. At some point while participants were preparing their answers, the experimenter briefly interrupted to state that the selector had completed a series of questionnaires and was now waiting for the advertiser to finish answering the questions. This interruption served to lend credibility to the cover story.

After the time for answering the questions expired, participants were prompted to work on solving several anagrams while supposedly waiting to receive feedback from the selector. Roughly four minutes into the anagram task, a message appeared on the screen, purportedly sent by the selector, in which he or she indicated a desire to work together with the participant (acceptance), a desire to work alone (rejection), or expressed indifference and suggested that he or she would do whatever was easiest for the experimenter (control; See Appendix B). Following receipt of the selector's decision, participants were prompted to notify the experimenter of the reply. The experimenter

instructed participants to return to the computer to complete some additional measures before leaving, ostensibly to verify the selector's response.

Upon returning to the computer, participants completed the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988). They were then asked to rate their impression of the selector on several personality traits. After providing these ratings, participants were informed that they would see an image of the selector and that they should take some time to examine the picture carefully. Participants viewed a picture of the selector, showing him or her from the neck up and displaying a neutral expression, and clicked the mouse to advance to the next screen after they had finished examining the picture. Three male pictures and three female pictures were employed in this study, with each participant randomly assigned to view one of the three opposite-sex images.³ Pictures of average attractiveness were selected for inclusion in the study to avoid floor or ceiling effects. Additionally, the use of average-attractiveness targets allows the greatest latitude for biased appraisals of attractiveness to operate in either direction.

Participants rated the physical attractiveness of the selector and provided ratings pertaining to his or her physiognomic features (from Paunonen, 2006, see Appendix C). The selector's picture was presented on the screen as participants completed these ratings. Participants then completed an unrelated study and when they were finished, they alerted the experimenter who guided them through a funneled suspicion probe and debriefed them as to the true nature of the research.

³ The pictures used in Studies 1 and 2 were obtained from an internet database located at <http://vitallongevity.utdallas.edu/stimuli/>. I and a group of undergraduate research assistants selected photographs which we agreed depicted individuals of average attractiveness. Across the two studies, collapsing across feedback condition, the mean attractiveness ratings of the six photographs ranged from 3.92 to 4.71 on a seven-point scale, indicating that all six pictures were representative of individuals of roughly average attractiveness.

Measures

Brief Mood Introspection Scale. Shortly after receiving feedback from the selector, participants completed the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988) to ascertain whether the feedback evoked changes in participants' mood. Participants rated the extent to which they were currently feeling sixteen different emotions (*peppy, fed up, caring, calm, lively, sad, jittery, drowsy, happy, loving, nervous, gloomy, tired, active, content, grouchy*) on a seven-point scale ($1 = \textit{Very uncharacteristic}$; $4 = \textit{Neither uncharacteristic nor characteristic}$; $7 = \textit{Very characteristic}$).

Impressions of selector. After receiving feedback from the selector and reporting on their mood, but before seeing the picture, participants provided their impressions of the selector on several personality traits. These questions took the form, "How _____ do you expect this person to be?" and responses were made using a seven-point scale ($1 = \textit{not at all}$; $4 = \textit{somewhat}$; $7 = \textit{extremely}$) The fourteen traits on which the selector was judged included *boring, ambitious, conceited, leader-like, sociable, funny, hard-working, socially dominant, intelligent, friendly, motivated, interesting, rude, and outgoing*.

Dependent measures. After examining a picture of the selector, participants judged how physically attractive they perceived the selector to be. They rated the selector on the traits *physically attractive, good-looking, and easy on the eyes*. Ratings of the selector on these items were averaged to create a composite rating of physical attractiveness ($\alpha = .86$). Participants also rated the appearance of the selector's various physiognomic features, assessed with nineteen items (e.g., *eye size, hair texture, lip size, symmetry*, from Paunonen, 2006, see Appendix C for a full list of included features).

Ratings of the selector's attractiveness and appearance of specific features were made using a seven-point scale (e.g., *physically attractive*: 1 = *very unattractive*; 4 = *neither unattractive nor attractive*; 7 = *very attractive*; *lip size*: 1 = *very thin*; 4 = *neither thin nor full*; 7 = *very full*).

Results

Test of Hypotheses

I hypothesized that participants would judge the selector to be more attractive when he or she provided acceptance feedback than when he or she expressed indifference to meeting (control). Additionally, I hypothesized that participants in the rejection condition would judge the selector to be less attractive than would participants in the control condition. In short, I predicted that ratings of selector attractiveness would conform to the following pattern across the three conditions: rejection < control < acceptance.

To test these hypotheses, I conducted a two-way analysis of variance with feedback condition and participant sex as independent variables and the composite rating of selector physical attractiveness as the dependent variable. (See Table 1 for descriptive statistics of physical attractiveness as a function of feedback and participant sex.) A significant main effect of sex emerged such that women rated male targets as more physically attractive than men rated female targets, $F(1, 58) = 4.26, p = .043$. As expected, a significant main effect of feedback condition also emerged, $F(2, 58) = 6.75, p = .002$. The interaction between feedback condition and participant sex was not significant, $F(2, 58) = 0.23, p = .796$; thus, planned comparisons to test the hypotheses are collapsed across participant sex.

Table 1

Mean Physical Attractiveness Ratings as a Function of Feedback Condition and Participant Sex

	Feedback Condition		
	Rejection	Control	Acceptance
Male Participants	3.52 (0.79) <i>n</i> = 7	4.61 (0.71) <i>n</i> = 6	4.46 (1.13) <i>n</i> = 8
Female Participants	4.11 (0.86) <i>n</i> = 12	4.88 (0.65) <i>n</i> = 16	5.09 (1.09) <i>n</i> = 15
Total	3.89 (0.86) <i>n</i> = 19	4.80 (0.66) <i>n</i> = 22	4.87 (1.12) <i>n</i> = 23

Note. Standard deviations are given in parentheses.

Participants who received acceptance feedback did not rate the target as more attractive than did participants in the control condition, $F(1, 58) = 0.06, p = .803$, failing to offer support for the hypothesis that expressions of interest, relative to expressions of indifference, would enhance judgments of target physical attractiveness. Encouragingly, however, participants who received acceptance feedback rated the target as more attractive than did participants who received rejection feedback, $F(1, 58) = 12.41, p = .001$. Furthermore, participants who received rejection feedback rated the target as less attractive than did participants in the control condition, $F(1, 58) = 10.56, p = .002$,

confirming the hypothesis that a target's lack of interest results in diminished judgments of target physical attractiveness.

Supplementary Analyses

Dating status. A wealth of past research has indicated that individuals in committed relationships are inattentive to, and even devalue, attractive alternatives to the relationship (e.g., Johnson & Rusbult, 1989; Lydon et al., 1999; Maner, Rouby, & Gonzaga, 2008; Miller, 1997; Simpson et al., 1990). Accordingly, I conducted a two-way analysis of variance with feedback condition and dating status as independent variables and the composite rating of target attractiveness as the dependent variable. Neither the main effect of dating status [$F(1, 58) = 1.13, p = .292$] nor the interaction of feedback condition and dating status [$F(2, 58) = 1.42, p = .250$] were significant. However, these null results could reflect the small sample size of romantically involved participants (only 19 participants in total reported involvement in a romantic relationship). An examination of cell means (see Table 2) suggests that attractiveness ratings made by participants in dating relationships were quite similar across feedback conditions, compared to ratings made by single participants.

Table 2

Mean Physical Attractiveness Ratings as a Function of Feedback Condition and Dating Status

	Feedback Condition		
	Rejection	Control	Acceptance
Single Participants	3.81 (0.75) <i>n</i> = 5	4.93 (0.62) <i>n</i> = 7	5.08 (0.82) <i>n</i> = 7
Dating Participants	4.13 (1.19) <i>n</i> = 14	4.52 (0.72) <i>n</i> = 15	4.38 (1.58) <i>n</i> = 16
Total	3.89 (0.86) <i>n</i> = 19	4.80 (0.66) <i>n</i> = 22	4.87 (1.12) <i>n</i> = 23

Note. Standard deviations are given in parentheses.

Physiognomic features. To ascertain whether feedback provided by the target influenced ratings of specific features of the target's face, I conducted a two-way multivariate analysis of variance with feedback condition and participant sex as independent variables and the ratings of the target's physiognomic features as the dependent variables. A significant main effect of participant sex emerged, *Pillai's trace* = .787, $F(19, 40) = 7.76$, $p < .001$, which is not surprising given that men's and women's faces naturally differ in appearance. More intriguingly, a significant main effect of

feedback condition also emerged, *Pillai's trace* = .992, $F(38, 82) = 2.12$, $p = .002$. The interaction between feedback condition and participant sex was not significant, *Pillai's trace* = .728, $F(38, 82) = 1.24$, $p = .212$.

The significant multivariate main effect of feedback condition was probed further by univariate tests for each physiognomic feature. Four of the 19 facial features were judged as different as a function of feedback condition: kindness of the face, nose size, cheekbone structure, and symmetry (all $ps < .05$). Additionally, there was a marginally significant effect for neck shape, $p = .055$. Post-hoc simple comparison tests for each feature revealed that rejecting targets were rated to have less kind faces, larger noses, and more asymmetrical faces than were both accepting and control targets. Rejecting targets were also seen as having lower-set cheekbones and stouter necks in comparison to accepting targets, but these perceptions did not differ between rejecting and control targets. (See Table 3 for cell means for each physiognomic feature judged to differ across feedback conditions.) In essence, when targets reported a lack of interest in meeting participants, participants judged certain facial features of the target to be rather unattractive.

Table 3

Mean Ratings of Physiognomic Features Judged to Differ Across Feedback Conditions

Physiognomic Feature	Feedback Condition		
	Rejection	Control	Acceptance
Mean face-kind face	3.21 _a	5.05 _b	5.26 _b
Small nose-large nose	4.53 _a	3.95 _b	3.96 _b
Low cheekbones-high cheekbones	3.21 _a	3.55 _a	4.13 _b
Asymmetrical face-symmetrical face	3.68 _a	5.00 _b	4.91 _b
Stout neck-graceful neck	3.32 _a	3.59 _{ab}	4.00 _b

Note. Means with different subscripts differ significantly between feedback conditions. Higher scores reflect a stronger judgment of the rightmost descriptor for each attribute.

Mood. Participants' mood was assessed after the feedback manipulation to ascertain whether mood was influenced by the feedback. I performed a principal axis factor analysis with a promax rotation on the sixteen items from the BMIS. The scree plot suggested a two-factor solution. The items *fed up* and *sad* were cross-loaded and excluded when creating composite scores. The remaining items had factor loadings greater than .46 and cross-loadings less than .28. The eight items loading on the first factor constituted a general *positive mood* variable and the six items loading on the second factor constituted a general *negative mood* variable. (See Table 4 for a list of all factor loadings.) Thus, a positive mood composite variable was formed by averaging responses to the eight positive mood items (with *gloomy* ratings reverse scored, $\alpha = .88$) and a negative mood composite variable was formed by averaging responses to the six negative mood items (with *calm* ratings reverse scored, $\alpha = .75$).

Table 4

Factor Loadings for the Positive and Negative Mood Items

	Positive Mood	Negative Mood
Peppy	.608	.263
Fed up	-.338	.379
Caring	.700	.041
Calm	.124	-.465
Lively	.880	.237
Sad	-.458	.413
Jittery	.224	.633
Drowsy	.115	.591
Happy	.866	.044
Loving	.670	-.084
Nervous	.262	.676
Gloomy	-.545	.275
Tired	-.095	.555
Active	.695	.084
Content	.623	-.145
Grouchy	-.123	.673

Note. Loadings in bold font represent items included in creating composite scores for each factor.

I conducted a two-way analysis of variance with feedback condition and participant sex as independent variables and positive mood composite scores as the

dependent variable. This analysis yielded a significant main effect of feedback condition, $F(2, 58) = 12.10, p < .001$. Mirroring the analysis for physical attractiveness ratings, participants who were rejected by targets ($M = 4.04; SD = 1.09$) reported a less positive mood compared to participants who received acceptance feedback [$M = 5.34; SD = 0.64; F(1, 58) = 24.76, p < .001$] and compared to participants in the control condition [$M = 5.16; SD = 0.73; F(1, 58) = 18.25, p < .001$]. In addition, positive mood was positively correlated with attractiveness ratings, $r(64) = .30, p = .016$. Nevertheless, when positive mood was included as a covariate in the primary hypothesis test predicting target attractiveness ratings from feedback condition and participant sex, the main effect of feedback condition remained significant, $F(2, 57) = 4.05, p = .023$. Therefore, changes in positive mood cannot fully explain shifting judgments of attractiveness in response to belongingness feedback.

Next, an identical two-way analysis of variance to that described in the above paragraph was conducted with negative mood composite scores serving as the dependent variable. This analysis also yielded a significant main effect of feedback condition, $F(2, 58) = 3.50, p = .037$, with participants receiving rejection feedback ($M = 3.86, SD = 1.05$) experiencing more negative mood than participants in the control condition [$M = 3.17, SD = 1.11; F(1, 58) = 4.48, p = .039$] and marginally more negative mood than participants receiving acceptance feedback [$M = 3.25, SD = 1.02; F(1, 58) = 3.49, p = .067$]. Negative mood, however, was not significantly correlated with attractiveness ratings, $r(64) = -.04, p = .733$, affirming that effects on mood do not explain shifts in attractiveness judgments.

General impression of the target. I performed a principal axis factor analysis with a promax rotation on participants' rated impressions of the selector's personality traits. The scree plot suggested a one-factor solution for the 14 items. All items exhibited loadings greater than .40, except for *socially dominant*, which had a loading of .29, and was thus excluded from further analysis. A general positive impression composite score was computed by averaging responses to the remaining 13 items (with *boring*, *conceited*, and *rude* ratings reverse scored), such that higher scores reflected a more positive impression ($\alpha = .88$).

I conducted a two-way analysis of variance with feedback condition and participant sex as independent variables and general impression as the dependent variable. This analysis revealed a significant main effect of feedback condition, $F(2, 58) = 39.12, p < .001$. Participants in the rejection condition formed a relatively more negative impression of the target and participants in the acceptance condition formed a relatively more positive impression of the target (see Table 5). Furthermore, general impression scores were positively correlated with attractiveness ratings, $r(64) = .50, p < .001$, such that more positive impressions were associated with more flattering ratings of attractiveness. When general impression was included as a covariate in the primary hypothesis test predicting target attractiveness ratings from feedback condition and participant sex, the main effect of feedback was reduced to nonsignificance, $F(2, 57) = 0.96, p = .391$. Thus, the effect of liking on physical attractiveness judgments observed in the present study might be part and parcel of a general tendency to respond less positively to rejecting targets.

Table 5

Mean General Impression Ratings Within Each Feedback Condition

Feedback Condition		
Rejection	Control	Acceptance
3.53 ^a	4.51 ^b	5.20 ^c

Note. Means with different subscripts differ significantly between feedback conditions.

Discussion

Study 1 provided some support for altered appraisals of target attractiveness as a function of feedback from the target. Specifically, the study offered evidence that rejection feedback in particular results in modified construals of target attractiveness: targets who conveyed a lack of interest in meeting participants were judged to be less physically attractive than accepting targets and targets who responded with indifference. Participants did not rate accepting targets as more attractive than indifferent targets, failing to provide convincing support for the hypothesis that acceptance feedback would enhance attractiveness appraisals.

Although the effect of target feedback on attractiveness judgments was not significantly moderated by participant sex, an inspection of Table 1 suggests that men were particularly unaffected by target acceptance. Wood and Brumbaugh (2009) observed that men exhibit more consensus in their appraisals of others' attractiveness than do women. The findings of Wood and Brumbaugh (2009) imply, then, that women might be more susceptible than men to nonphysical influences when assessing others' appearance, hence women's generally lower consensus. Study 2 was therefore designed

to include only female participants in retesting the hypothesis that acceptance feedback results in more flattering assessments of target attractiveness. Furthermore, Study 3 included single participants of both sexes and emphasized the romantic availability of the target in order to discern whether a more explicitly romantic context can bias both women's and men's assessments of attractiveness in response to acceptance feedback.

In Study 1, receiving rejection feedback from targets exerted an effect on participants' mood: participants reported both more negative and less positive moods upon learning that the target was uninterested in meeting. Mood did not, however, mediate the influence of feedback on physical attractiveness judgments. Nonetheless, to rule out more fully a mood account of changes in attractiveness judgments, Study 2 introduced ratings of belongingness-irrelevant control faces. Changes in mood could conceivably result in a generalized tendency to see all subsequently encountered stimuli in a positive or negative light. I surmise, on the other hand, that altered appraisals should be specific to targets who supply belongingness feedback. Demonstrating that belongingness feedback results in biased appraisals specifically of feedback providers, and not of random targets more broadly, would support the claim that biased appraisals stem from motivation to (mis)construe the appearance of people who fulfill or frustrate our belongingness needs.

Participants in Study 1 who were rejected by the target were generally critical of the target: both the target's attractiveness and personality were rated less favorably. When controlling for general impressions of the target, the effect of feedback condition on attractiveness judgments was rendered nonsignificant. People typically report negative impressions of others in response to being rejected (Buckley, Winkel, & Leary, 2004) so

it is not surprising that a similar finding was observed in Study 1. Because participants had very little basis for rating the target's personality, having learned only the target's sex and received his or her feedback before making the personality ratings, the resulting impression they formed was likely a large reflection of the feedback. It appears that people apply a tit-for-tat response strategy when making judgments of feedback providers, judging accepting targets as uniformly positive and judging rejecting targets as uniformly negative.

Ratings of some, but not all, of the target's specific facial features were influenced by belongingness feedback, implying that participants might have indeed perceived the same faces as subtly different following the receipt of rejection feedback, in addition to ascribing negative qualities to the target. My third study addressed more directly whether perceptual processes are subject to influence by targets' acceptance or rejection of perceivers. First, however, I describe Study 2, designed to ascertain whether biased judgments of target attractiveness are specific to targets supplying belongingness feedback and whether such judgments generalize to same-sex targets or are reserved solely for opposite-sex targets who offer potential for romantic union.

CHAPTER 3: STUDY 2

Overview and Hypotheses

Study 1 revealed that participants judged opposite-sex targets who rejected them as relatively unattractive. Study 2 sought to replicate this effect and test again whether attractiveness judgments can be positively influenced when targets offer acceptance feedback. The procedure of Study 2 was largely similar to that of Study 1, with a few important modifications. First, only women were included, as they are generally more variable than are men in their judgments of others' attractiveness (Wood & Brumbaugh, 2009), thus potentially allowing for a stronger test of the hypothesis that belongingness feedback results in shifting appraisals of target attractiveness. Second, participants were randomly assigned to rate opposite-sex targets or same-sex targets to discern whether belongingness feedback uniquely biases appraisals of prospective romantic partners or biases appraisals of any accepting or rejecting target more broadly. Third, all participants rated both the attractiveness of a target supplying belongingness feedback and the attractiveness of a belongingness-irrelevant control target. This added control provided a more compelling test of the motivational account of distorted attractiveness appraisals and tested an alternative account based on generalized mood effects.

I tentatively hypothesized that participants would rate accepting targets as more physically attractive than targets who expressed indifference (control condition). Although this hypothesis did not receive convincing support in Study 1, it merits another examination based on the theoretical rationale of the New Look and the abundance of research separately revealing the phenomena of reciprocal liking (e.g., Condon & Crano, 1988) and positively biased judgments of attractiveness in response to positive

information (e.g., Paunonen, 2006). Enhanced judgments of physical attractiveness following acceptance feedback might also be more pronounced among women. Based on the results of Study 1, I additionally and more confidently hypothesized that participants would rate rejecting targets as less physically attractive than indifferent targets. Although prior research has shown that judgments of same-sex and opposite-sex attractiveness are similarly influenced (e.g., Paunonen, 2006), I expected that the effects of belongingness feedback would be particularly pronounced among participants judging opposite-sex targets, consistent with research demonstrating that learning of another's liking precipitates the experience of falling in love (Aron et al., 1989; Sprecher, Aron, et al., 1994; Sprecher, 1998). I predicted that ratings of belongingness-irrelevant control faces would not differ as a function of feedback condition, thereby demonstrating that motivated appraisals extend only to targets who carry belongingness implications.

Method

Participants

Forty-three female introductory psychology students participated in the present study in exchange for course credit. Data from one homosexual participant and one bisexual participant were excluded from analyses, leaving a final sample of 41 participants. Nearly two-thirds of the included participants (63.4%) identified themselves as Caucasian and the remainder identified as belonging to another ethnic group. Participants' mean age was 18.7 years old, ($SD = 0.91$). Nineteen participants (46.3%) reported involvement in a romantic relationship at the time of participation.⁴

⁴ The moderating influence of dating status was not tested in Study 2, as several cells in a three-way analysis of variance including feedback condition, target sex, and dating status would contain only two or three participants.

Procedure

The procedure of Study 2 largely mirrored the procedure of Study 1, and thus only the differences in protocol are subsequently expounded upon. Participants completed the study in individual sessions and sat in a large waiting room until a couple of minutes after the official start time of the study. At that point, an experimenter welcomed participants and explained to them that he or she was still expecting a second participant, but that they better get started so as to not delay the study any further. The experimenter seated the participant at a computer in an individual testing room and obtained informed consent. Then, the experimenter delivered the same cover story from Study 1 to participants, informing them that they were taking part in a study examining the processes involved in getting to know other people. In Study 2, participants were simply told they had been paired with another participant (sex unspecified), rather than being told they were paired with an opposite-sex participant in particular, as had been the case in Study 1. Participants were told that they would be exchanging different types of information (e.g., written statements vs. photographs) with the other person and completing ratings of one another. After providing informed consent, participants were left alone to commence the study.

Participants were first prompted to answer the same demographic questions asked in Study 1 and subsequently completed a brief unrelated study. Participants were then informed of their “random” assignment to the role of advertiser, notified the experimenter of this assignment, and answered the same open-ended questions to which participants responded in Study 1 (see Appendix A). Again, while participants developed their

answers, the experimenter interrupted to inform them that the selector was awaiting the answers.

Participants were instructed to solve anagrams while awaiting feedback from the selector. Roughly four minutes into the anagram task, the participant received the selector's message in which he or she indicated a desire to work together with the advertiser, a desire to work alone, or expressed indifference and suggested that he or she would do whatever was easiest for the experimenter, constituting the belongingness feedback manipulation (See Appendix B). Participants alerted the experimenter, who then ostensibly left to verify the selector's response and instructed participants to return to the computer to continue the study.

Participants next completed the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988) and rated their impressions of the selector (still sex unspecified) on several personality traits. After providing these ratings, roughly half of the participants were told that they would see an image of the selector and that they should take some time to examine the picture carefully. The remaining participants were told that they would see an image of a random participant who took part in the study the previous semester and with whom they were not paired presently. Orthogonally, roughly half of the participants were presented with a female image and the remaining participants were presented with a male image. Participants clicked the mouse after examining the picture to rate the target's attractiveness and perceived physiognomic features (see Appendix C). The target's picture remained on the screen as participants completed these ratings.

After providing ratings of the first target, participants were then informed that they would see an image of a second target. Participants who first saw a picture of the

ostensible selector were then presented with a picture of a purported random participant from the past semester; participants who first saw a picture of a random participant were now faced with a picture of the ostensible selector. The second image always depicted someone of the same sex as the person depicted in the first image. Participants again rated the attractiveness and physiognomic features of the target in the second picture, with the target's picture remaining on the screen while the ratings were made.⁵ Two of the female images and two of the male images from Study 1 were employed in Study 2, counterbalanced such that, for each participant, one image represented the selector and the other represented the random participant. When participants had completed rating the second target's attractiveness and physiognomic features, they notified the experimenter who guided the participants through a funneled suspicion probe and debriefed them as to the true nature of the research.

Measures

Participants completed the same measures from Study 1. These measures included the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988), impressions of the selector's personality (excluding the *socially dominant* and *motivated* items), ratings of the selector's physical attractiveness (assessed with the items *physically attractive*, *good-looking*, and *easy on the eyes*, averaged to create a composite rating of the selector's physical attractiveness; $\alpha = .82$), and 19 ratings of the selector's physiognomic features (see Appendix C). Participants also completed the items assessing physical attractiveness (averaged to create a composite rating of the control target's physical attractiveness; $\alpha =$

⁵ No significant main effects or interactions involving the order in which participants rated the attractiveness and physiognomic features of the selector and random participant were observed, all F s < 2.04, all p s > .14.

.84) and physiognomic features for the random participant (belongingness-irrelevant control target).

Results

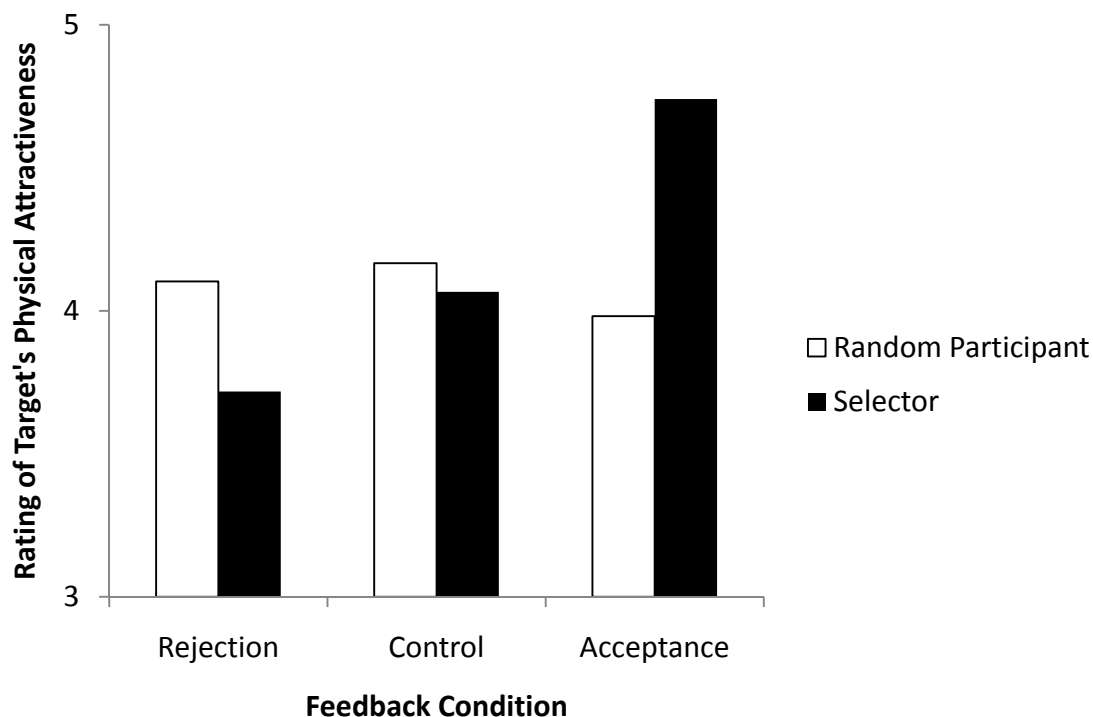
Test of Hypotheses

I performed a three-way mixed model analysis of variance with feedback condition and target sex as between-subjects variables, and target person (random participant or selector) as a within-subjects variable, predicting composite ratings of target attractiveness. I predicted a two-way interaction between feedback condition and target person, such that judgments of selector attractiveness would be affected by belongingness feedback, but that judgments of random participant attractiveness would not be so swayed. In addition, if biased judgments of accepting or rejecting targets stem from romantic motivation, the predicted two-way interaction should be qualified by a three-way interaction involving target sex.

The predicted two-way interaction involving feedback condition and target person was significant, $F(2, 35) = 3.43, p = .043$ (see Figure 2). This two-way interaction was not qualified by the expected three-way interaction involving target sex, $F(2, 35) = 0.49, p = .615$. All other main effects and interactions were nonsignificant, all F 's < 1.37 , all p 's $> .26$.

Figure 2

Mean Attractiveness Ratings as a Function of Feedback Condition and Target Person



To probe the observed two-way interaction, the simple main effect of feedback condition and consequent simple comparisons were tested separately for attractiveness ratings of the selector and attractiveness ratings of the random participant. As expected, ratings of the random participant's attractiveness did not vary as a function of feedback, $F(2, 38) = 0.12, p = .889$, whereas ratings of the selector's attractiveness were indeed influenced by the feedback, $F(2, 38) = 4.88, p = .013$. Consequently, I conducted simple comparison tests for ratings of selector physical attractiveness. Participants receiving acceptance feedback rated the selector as more physically attractive than did participants who received rejection feedback, $F(1, 38) = 9.24, p = .004$, advancing evidence for the malleability of physical attractiveness judgments. There was a marginally significant

difference between attractiveness ratings of accepting targets and attractiveness ratings of indifferent control targets, $F(1, 38) = 3.42, p = .072$, providing support for the hypothesis that acceptance feedback enhances attractiveness appraisals. Ratings of rejecting targets did not significantly differ from ratings of indifferent control targets, $F(1, 38) = 0.80, p = .376$, though the means were in the predicted direction.

Supplementary Analyses

Physiognomic features. I performed a two-way multivariate analysis of variance predicting the selector's physiognomic features from feedback condition and target sex. Surprisingly, the multivariate main effect of target sex was not significant, *Pillai's trace* = .670, $F(19, 17) = 1.82, p = .110$, suggesting that the features of male and female faces were not perceived to vary, though the effect approached significance. In contrast to Study 1, the multivariate main effect of feedback was not significant, *Pillai's trace* = .879, $F(38, 36) = 0.74, p = .815$. The interaction of feedback condition and target sex was not significant, *Pillai's trace* = 1.140, $F(38, 36) = 1.26, p = .247$.

Mood. I performed a principal axis factor analysis with a promax rotation on participants' BMIS scores. The scree plot suggested a two-factor solution. The pattern matrix in Study 2 bore a similar structure to that in Study 1, but with a few differences. The items *sad, jittery, happy, nervous, and grouchy* were cross-loaded and excluded when creating composite scores. The eleven included items had factor loadings greater than .45 and cross-loadings less than .30. As in Study 1, the two emergent factors reflected general positive mood and general negative mood. (See Table 6 for a list of all factor loadings.) Thus, two separate composite scores were computed: a positive mood composite score formed by averaging responses to the five positive mood items ($\alpha = .80$)

and a negative mood composite score formed by averaging responses to the six negative mood items (with *calm* and *content* ratings reverse scored; $\alpha = .78$).

Table 6

Factor Loadings for the Positive and Negative Mood Items

	Positive Mood	Negative Mood
Peppy	.596	-.027
Fed up	-.295	.543
Caring	.754	.143
Calm	.083	-.546
Lively	.812	-.069
Sad	.390	.945
Jittery	.199	.115
Drowsy	.023	.561
Happy	.646	-.334
Loving	.755	.177
Nervous	.395	.761
Gloomy	-.010	.687
Tired	-.049	.520
Active	.453	-.249
Content	.188	-.673
Grouchy	-.464	.539

Note. Loadings in bold font represent items included in creating composite scores for each factor.

I conducted a one-way analysis of variance predicting positive mood composite scores from feedback condition. A marginally significant main effect of feedback condition emerged, $F(2, 38) = 2.86, p = .070$, with participants receiving rejection feedback ($M = 4.48, SD = 0.87$) experiencing less positive mood than participants receiving acceptance feedback [$M = 5.20, SD = 0.81; F(1, 38) = 4.99, p = .032$]. Additionally, participants in the control condition ($M = 4.62, SD = 1.04$) reported marginally less positive mood than participants receiving acceptance feedback, $F(1, 38) = 2.73, p = .107$. Positive mood was virtually uncorrelated with attractiveness ratings, however, $r(41) = -.02, p = .890$, and thus cannot account for the effect of feedback condition on attractiveness judgments.

I also performed a one-way analysis of variance predicting negative mood composite scores from feedback condition. Feedback condition did not predict negative mood, $F(2, 38) = 2.03, p = .145$. In sum, then, a change in mood induced by the feedback is not a viable explanation for corresponding changes in attractiveness ratings.

General impression of the target. I performed a principal axis factor analysis with a promax rotation on participants' impressions of the selector's personality traits. The scree plot suggested a one-factor solution, and all items exhibited loadings greater than .50. A general impression composite score was computed by averaging responses to the twelve items (with *boring, conceited, and rude* ratings reverse scored), such that higher scores represented a more positive impression ($\alpha = .92$).

I conducted a one-way analysis of variance with feedback condition as the independent variable and general positive impression composite scores as the dependent variable. This analysis yielded a significant main effect of feedback, $F(2, 38) = 31.07, p <$

.001. Participants in the rejection condition formed a relatively more negative impression of the target and participants in the acceptance condition formed a relatively more positive impression of the target (see Table 7). Furthermore, general impression scores were positively correlated with ratings of the selector's attractiveness, $r(41) = .41, p = .007$, such that more positive impressions were associated with more flattering ratings of attractiveness. When general impression was included as a covariate in an analysis of variance predicting selector attractiveness ratings from feedback condition, the main effect of interest was reduced to nonsignificance, $F(2, 37) = .99, p = .380$. As in Study 1, the effect of belongingness feedback on physical attractiveness judgments observed in Study 2 might reflect a broader inclination to respond to accepting targets favorably and to rejecting targets unfavorably.

Table 7

Mean General Impression Ratings Within Each Feedback Condition

Feedback Condition		
Rejection	Control	Acceptance
3.58 ^a	4.08 ^b	5.12 ^c

Note. Means with different subscripts differ significantly between feedback conditions.

Discussion

The results of Study 2 were generally consistent with the hypothesis that acceptance feedback would promote enhanced physical attractiveness assessments. Participants rated accepting targets as more physically attractive than rejecting targets. There was also a tendency for participants to judge accepting targets as more physically

attractive than indifferent control targets. Unlike Study 1, the reverse effect – judging rejecting targets as particularly unattractive compared to control targets – was not evident in Study 2, though rejecting targets did receive the lowest attractiveness ratings. Also, the influence of belongingness feedback on attractiveness appraisals cannot be attributed to a generalized mood effect. The feedback predicted changes in positive (but not negative) mood, but changes in positive mood were not associated with changes in attractiveness ratings. Moreover, any affective consequences of the feedback did not simply bias judgments of all subsequently encountered stimuli; attractiveness ratings of a belongingness-irrelevant control target were completely unaffected by the feedback manipulation.

The target specificity of the belongingness effect provides encouraging support for a motivational account of altered appraisals of attractiveness. Being met with the selector's acceptance led individuals to construe the selector's appearance in a more favorable light, but did not alter their judgments of a control target, suggesting that the feedback impelled changes in assessments only for belongingness-relevant targets. Contrary to expectations, construals of the selector's attractiveness were evidenced for both same-sex and opposite-sex targets, thus calling into question the role of romantic motivation in eliciting biased assessments. Study 3 sought to provide more direct evidence for a romantic motivation account of biases in the assessment of attractiveness by involving only unattached participants and by making the target's romantic availability clear. Furthermore, Study 3 again included opposite-sex targets and same-sex targets to distinguish the influence of specific romantic motivation versus general social motivation in distorting appraisals of targets supplying belongingness feedback.

In Study 2, as in Study 1, changes in attractiveness ratings as a function of feedback were accompanied by parallel changes in general positive impressions of the target's personality. When controlling for such general impressions, the effect of feedback condition on attractiveness judgments was rendered nonsignificant. In Study 2, at the time of making the personality ratings, participants knew nothing about the target, not even the target's sex, beyond the feedback they had received. Thus, participants' general impressions of the target presumably were a simple reflection of the feedback received from the target: participants conjured up particularly positive impressions of accepting targets and particularly negative impressions of rejecting targets. Given the powerful human need to seek belongingness (Baumeister & Leary, 1995), it is not particularly surprising that appraisals of targets who fulfill or frustrate this need are adjusted accordingly on a wide range of attributes, not just on attractiveness assessments. In order to demonstrate more specifically that distortions in visual perception result from belongingness feedback, Study 3 employed a face recognition task that has previously been used to reveal distortions in perceptions of individuals' own faces (Epley & Whitchurch, 2008).

CHAPTER 4: STUDY 3

Overview and Hypotheses

Studies 1 and 2 collectively demonstrated that people incorporate information about targets' interest in them when appraising targets' attractiveness. These first two studies, however, did not conclusively demonstrate that shifting appraisals of attractiveness emerge at the level of perception, rather than simply biasing judgments more broadly. The primary purpose of Study 3 was to advance stronger evidence for the hypothesis that belongingness feedback biases attractiveness perceptions by introducing a face recognition dependent measure that relates more directly to visual perception. Study 3 also induced a more explicit romantic theme by portraying the target as romantically available and eager to meet new people. Whereas Study 2 showed that biased appraisals of target attractiveness emerged for both same-sex and opposite-sex targets, Study 3 sought to ascertain whether the induction of a romantic theme would elicit biased appraisals primarily of opposite-sex targets. To provide further evidence that social motivation underlies biased perceptions of targets providing belongingness feedback, Study 3 included a measure of participants' felt rapport with the target to test whether that rapport moderated the influence of belongingness feedback on attractiveness assessments; people should respond most strongly to feedback coming from targets with whom they feel strong rapport.

The general procedure of Study 3 followed closely those of the previous two studies. Participants were told that a romantically available other person (the selector) would make a decision to either work alone on a later task or to work together with the participant. The ostensible other was either of the same sex as the participant or of the

opposite sex. Having shown in Study 2 that belongingness feedback does not bias attractiveness appraisals of belongingness-irrelevant control targets, Study 3 examined appraisals of selectors only. Participants saw a photograph of the selector near the outset of the study and later, under the guise of a memory task, were asked to identify the selector's true image from an array of distractor images varying in attractiveness. As in Studies 1 and 2, participants also provided explicit ratings of the selector's attractiveness and physiognomic features.

The hypotheses of this study are represented in Table 8. First, I hypothesized that participants' explicit ratings of the selector's attractiveness would be more flattering in the acceptance condition and less flattering in the rejection condition, compared to an ambiguous feedback control condition. Consistent with the results of Study 2, I expected that these effects would hold for both opposite-sex and same-sex targets. With the induction of a more apparent romantic context, however, I predicted that these effects would be more pronounced among participants rating opposite-sex targets. Regarding the face recognition task, I hypothesized that the average selected image would be more attractive in the acceptance condition and less attractive in the rejection condition, compared to an ambiguous feedback control condition. I expected that the effect of feedback on face recognition would be more pronounced for participants paired with an opposite-sex selector. I also explored whether participants' feelings of rapport with the target moderated the effect of belongingness feedback on attractiveness judgments and face recognition.

Table 8

Predicted Pattern of Explicit Judgments of Target Attractiveness and Face Recognition as a Function of Feedback Condition and Target Sex

	Feedback Condition		
	Rejection	Control	Acceptance
Same-Sex Appraisals	-	0	+
Opposite-Sex Appraisals	--	0	++

Note. A (0) represents a neutral judgment or accurate recognition of the selector's attractiveness; a (-) represents a more negative judgment or recognition, and a (+) represents a more positive judgment or recognition.

One possible alternative outcome for the present study is that opposite-sex and same-sex judgments of attractiveness will be equally influenced by belongingness feedback, as in Study 2, whereas opposite-sex face recognition uniquely will be affected by the feedback, but with no effect of feedback on same-sex face recognition. This dissociation would still be consistent with a motivational account of biased perception, and would demonstrate that visual perception of social targets' attractiveness is particularly prone to distortion as a function of romantic implications. Changes in both same-sex and opposite-sex judgments of attractiveness might reflect the operation of additional processes beyond visual perception (Gawronski & Bodenhausen, 2006; Strack & Martin, 1987). For example, in making explicit judgments of others, people might enact a tit-for-tat strategy in which individuals respond to positive or negative feedback from any source with positive or negative judgments, an outcome consistent with findings from Studies 1 and 2.

Discovery of a dissociation between explicit judgments of a target person and face recognition would complement prior research on assessments of natural environments, which has revealed similar dissociations. Proffitt (2006) reviewed studies showing that stated judgments of environmental parameters (e.g., distance estimates) are biased, whereas visually-guided haptic estimates are relatively accurate. His conclusion is that judgments might be skewed to prevent individuals from undertaking potentially costly behaviors, but that visually-guided perceptions are accurate in order to properly inform behavior that is already ongoing. Applying similar logic, distorted perceptions of faces primarily when viewing opposite-sex targets might serve as part of a mechanism for approaching romantically interested others and avoiding uninterested individuals. Shifting explicit judgments of both opposite-sex and same-sex faces might serve a more basic tit-for-tat goal: you responded kindly (unkindly) toward me, so I will respond kindly (unkindly) to you in return.

Method

Participants

Ninety-four introductory psychology students participated in the present study in exchange for course credit. Seven participants were excluded from analyses (four homosexual participants and three participants with invalid data resulting from failure to follow instructions) resulting in a final sample of 87 participants (68 women, 19 men). Approximately half of the included participants (52.9%) identified themselves as Caucasian, 19.5% identified themselves as Chinese, and the remainder identified as belonging to another ethnic group. Participants' mean age was 18.8 years old ($SD = 2.15$). Eligibility criteria specified that participants must be single, as the hypothesized

influence of romantic motivation on perceptual bias should operate most strongly for participants not already attached. As it turned out, six of the included participants reported involvement in a romantic relationship at the time of participation; nevertheless, they were retained in the analyses.⁶

Procedure

The procedure of Study 3 largely borrowed from the procedures of Studies 1 and 2. Participants completed the study in individual sessions. Upon arriving at the laboratory, an experimenter greeted the participant a couple of minutes past the scheduled start time, and after remarking that they should wait for someone else to show up, informed the participant that they had better get started. The experimenter asked the participant to read the informed consent form while he or she ostensibly returned to the waiting room to check for the other person, closing the door on the way out. The experimenter returned three minutes later and apologized to the participant for the delay, remarking that the other person needed to be set up.

The experimenter proceeded to describe to the participant the nature of the study. The experimenter explained that the participant and his or her partner would exchange written information and a photograph, and then complete ratings of one another, as part of a research project studying impression formation and memory for people. The participant was also told that he or she would work alone or with the other person on a jigsaw puzzle task as the final activity in the study. The experimenter then asked permission to take a photograph of the participant and subsequently retrieved a digital

⁶ The results of statistical tests did not change appreciably by removing those romantically involved participants.

camera.⁷ The experimenter instructed the participant to stand against the wall and to maintain a neutral expression, took a photograph of the participant's head and shoulders, and then directed the participant to begin the study. The experimenter remarked on the way out of the room that he or she was going to take the other person's photograph and upload the pictures into a computer program, closing the door on the way out.

The participant first answered several demographic questions. He or she was then prompted to write a self-descriptive statement that was ostensibly sent, along with his or her photograph, to the fictitious partner participant. The participant was asked to mention in the statement his or her major, age, dating status, and a brief description of interests and hobbies. After the participant finished typing the statement, he or she worked on solving anagrams while supposedly waiting to receive the partner's photograph and statement. Two minutes into the anagram task, the participant was presented with the photograph of the purported partner participant, which remained on the computer screen for five seconds. This picture depicted a same-sex or opposite-sex individual pre-rated as average to slightly above-average in physical attractiveness.⁸ The partner's descriptive statement then appeared, which the participant read before advancing to the next screen. In that statement, the other participant conveyed that he or she was single and excited about the opportunity to meet new people. Furthermore, the statement suggested a

⁷ The purpose of taking a photograph of participants was to maintain the cover story of sharing information with another participant. Every participant gave permission for his or her photograph to be taken. Photographs were never uploaded to a computer and each participant witnessed as the experimenter deleted his or her photograph from the camera at the conclusion of the study.

⁸ A sample of 31 undergraduate students enrolled in a summer psychology course rated 8 photos of each sex on physical attractiveness, using a 1-7 Likert-type scale (1 = *very unattractive*; 4 = *average attractiveness*; 7 = *very attractive*). Based on these ratings, three photos for each sex were selected for inclusion in the present study to represent individuals roughly average to above-average in attractiveness. The mean physical attractiveness ratings for the three female photos were 3.93, 4.24, and 5.31. The mean physical attractiveness ratings for the three male photos were 4.14, 4.24, and 4.34. Although the ratings of the three female photos varied in the pilot testing, ratings of these photos by participants in Study 3, collapsing across conditions, did not vary.

generally extraverted person with a wide range of interests. This description presented the target as romantically available and as someone who would be an appealing mate to most people (see Appendix D). Immediately after reviewing the statement, the participant answered questions assessing how much rapport he or she felt with the target.

After reading the partner's statement and completing the measure of rapport, the computer program alerted the participant that he or she had been assigned to the advertiser role, and to notify the experimenter of this assignment. The participant responded to the same open-ended questions used in Studies 1 and 2 (see Appendix A), with the answers ostensibly sent to the partner participant (the selector). The experimenter briefly interrupted the participant while he or she was working on answering the questions to indicate that the selector was awaiting the answers.

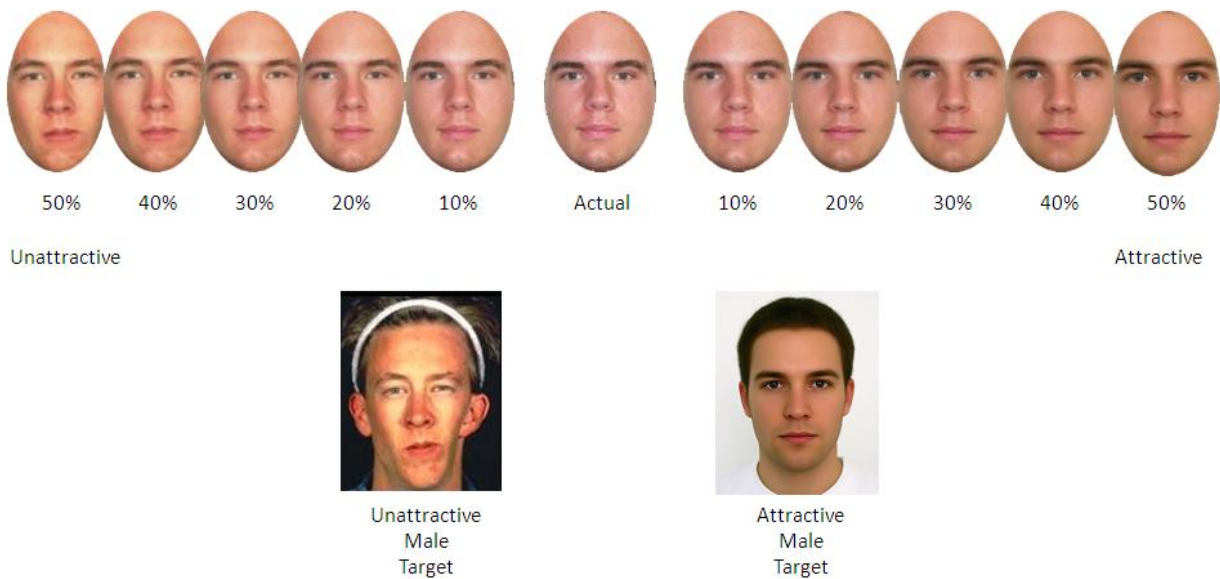
The participant was asked to solve anagrams while the selector purportedly reviewed the participant's answers. As in Studies 1 and 2, the participant received the selector's decision roughly four minutes into the anagram task, with the content of the acceptance and rejection feedback identical to the content in the prior two studies. For Study 3, however, participants in the control condition received an ambiguous message simply stating that the selector had made his or her decision, rather than receiving an indifferent response as in the previous studies; the specific nature of the decision was not revealed (See Appendix B). Unlike the previously-used indifferent control condition, this ambiguous control feedback was thought to be less likely construed by participants as interest or lack of interest and was thus a more proper neutral control. In all conditions, participants were asked to inform the experimenter after receiving the message, and the

experimenter ostensibly confirmed the selector's response and instructed participants to return to the computer to continue with the study.

Upon returning to the computer, the participant completed the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988) and rated his or her impressions of the selector on several personality traits. The computer program then informed the participant of a memory test regarding the ostensible other person. First, the participant was presented with an array of eleven photographs: one being the actual photograph of the selector that was viewed earlier in the study, five being versions of the selector's photograph morphed with an unattractive same-sex target face in 10% increments (up to 50%), and five being versions of the selector's photograph morphed with an attractive same-sex target face in 10% increments (up to 50%). All images were cropped so that the imperfections on the periphery of the morphed images resulting from morphing faces of different shapes were not visible. (See Figure 3 for a visual reproduction of one set of images.) The participant was then asked to select which of the eleven images, ordered randomly on the screen, matched exactly the actual photograph seen previously. (See Figure 4 for an example array of a female target, as shown on the computer screen.)

Figure 3

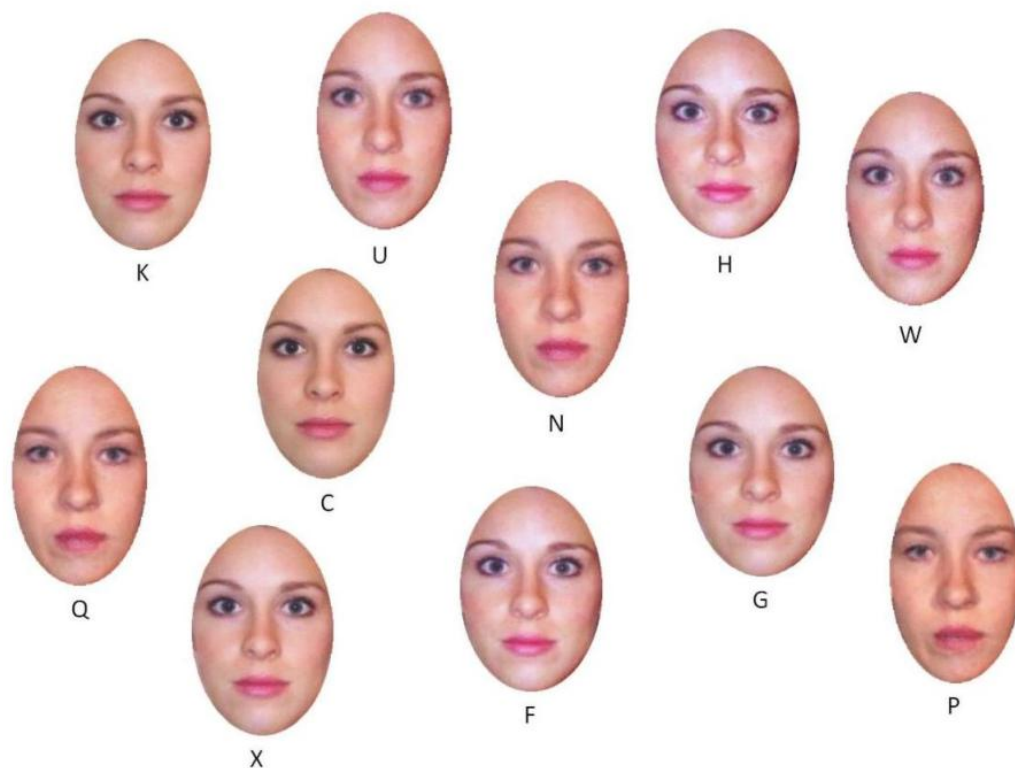
Example Set of a Male Target's Image (centre) Morphed with an Unattractive (bottom left) and Attractive (bottom right) Image



Note. The distractor morph images were created using the program Morph Man 4.0.

Figure 4

Example Female Array as Presented on the Computer Screen



Note. Face H corresponds to the true image in this array. Three different arrays were created for each photo used in Study 3, with participants randomly assigned to view one of the three possible arrays.

To maintain the cover story of assessing memory, the participant was asked to answer questions about the selector based on the prior information exchange (i.e., What is this person's major? What is this person's age? What is this person's dating status?). The participant was told that anyone who picked the correct photograph and answered all three questions correctly would have his or her name entered into a draw for a chance to win \$50. Offering a chance at a prize for correct selections was intended to induce accuracy motivation in participants; thus, any bias in face recognition could more properly be attributed to true perceptual distortion and not simply to a conscious decision

to enhance or derogate the selector by knowingly picking an undue flattering or unflattering image.⁹

After the memory task, the participant was asked to provide explicit ratings of the selector's attractiveness and physiognomic features (see Appendix C). The selector's true image was presented on the screen as the participant completed these ratings. Upon completion of the attractiveness and physiognomic ratings, the participant informed the experimenter that he or she was finished with the study. The experimenter subsequently guided the participant through a funneled suspicion probe and debriefed the individual as to the true nature of the research. In gauging suspicion, the experimenter asked a series of progressively probing questions. Notes of participant responses were recorded and a quantitative suspicion score was assigned to participants who expressed some degree of disbelief in response to any of the questions. (See Appendix E for the list of questions and information on coding of suspicious participants.)

Measures

After receiving the belongingness feedback, all participants completed the same measures used in Studies 1 and 2. These measures included the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988), impressions of the selector's personality (including the *socially dominant* and *motivated* items assessed in Study 1), ratings of the selector's physical attractiveness (assessed with the items *physically attractive*, *good-looking*, and *easy on the eyes*, averaged together to create a composite rating of physical

⁹ Every participant correctly answered the target's major and dating status correctly. Only four participants erred in their answer of the target's age, with three only being off by one year and one not providing an answer. In general, the vast majority of correct responses implies that the accuracy motivation induction was successful. In actuality, all participants were entered into a random draw to determine the winner of a \$50 bonus prize.

attractiveness; $\alpha = .91$), and ratings of the selector's physiognomic features (see Appendix C).

Felt rapport. After reading the selector's statement at the outset of the study, but before receiving belongingness feedback, all participants rated how much rapport they felt with the selector. This measure was included to bolster a motivational explanation of biased attractiveness appraisals by examining whether participants' level of rapport moderated the effect of belongingness feedback on the dependent measures. The rapport measure included three items: *I sense a real connection with the other participant*, *I think I would get along really well with the other participant*, and *I think I have a lot in common with the other participant* (averaged together to create a composite measure of rapport; $\alpha = .82$). Participants rated their extent of agreement with these statements using a seven-point Likert-type scale (*1 = strongly disagree; 4 = neither disagree nor agree; 7 = strongly agree*).

Results

Test of Hypotheses

Attractiveness judgments. I hypothesized that a two-way interaction between feedback condition and target sex would emerge. Specifically, I hypothesized that target attractiveness ratings would be higher in the acceptance condition and lower in the rejection condition, compared to the control condition, and that this pattern would be particularly pronounced among participants rating opposite-sex targets.

To test this hypothesis, I conducted a two-way analysis of variance with feedback condition and target sex as independent variables and the composite rating of target physical attractiveness as the dependent variable. (See Table 9 for descriptive statistics of

physical attractiveness ratings as a function of feedback condition and target sex.) The predicted two-way interaction was not significant, $F(2, 79) = 0.67, p = .514$. An unexpected significant main effect of target sex was observed, $F(1, 79) = 9.42, p = .003$, with same-sex targets being rated as more attractive than opposite-sex targets. The significant main effect of target sex was driven by women's greater tendency, compared to men, to judge same-sex targets as attractive. A reanalysis of the primary hypothesis test, but including participant sex as a factor, uncovered a significant interaction between target sex and participant sex, $F(1, 73) 16.49, p < .001$, with women rating female targets ($M = 5.65 SD = 0.73$) as much more attractive than men rating male targets ($M = 4.50 SD = 1.08$).

Table 9

Mean Physical Attractiveness Ratings as a Function of Feedback Condition and Target Sex

	Feedback Condition		
	Rejection	Control	Acceptance
Same-Sex Targets	4.67 (0.75) $n = 12$	5.44 (1.03) $n = 15$	5.88 (0.66) $n = 14$
Opposite-Sex Targets	4.33 (1.13) $n = 15$	4.88 (0.70) $n = 14$	5.00 (0.89) $n = 15$
Total	4.48 (0.98) $n = 27$	5.17 (0.92) $n = 29$	5.43 (0.89) $n = 29$

Note. Standard deviations are given in parentheses below the mean ratings.

Partly consistent with the hypothesis, a significant main effect of feedback was also observed, $F(2, 79) = 8.16, p = .001$. As a follow-up, the two-way analysis of variance with feedback condition and target sex predicting target physical attractiveness ratings was repeated with suspicion scores included as a covariate. The main effects of feedback condition and target sex remained significant, controlling for suspicion. Thus, suspicion scores were not included in the following planned comparisons between feedback conditions, collapsing across target sex.

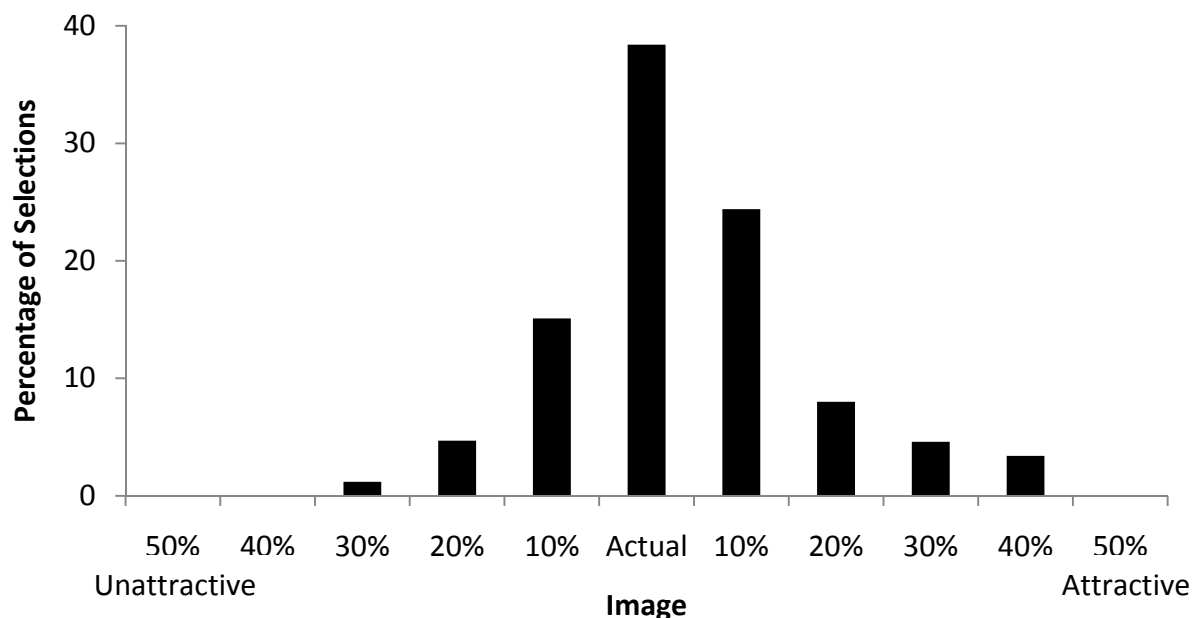
Consistent with predictions, participants who received rejection feedback rated the target as less attractive than did participants in the control condition, $F(1, 79) = 8.48, p = .005$. However, participants receiving acceptance feedback did not rate the target as more attractive than did participants in the control condition, $F(1, 79) = 1.18, p = .281$, though the means were in the predicted direction. As expected, participants who received acceptance feedback rated the target as more attractive than did participants who received rejection feedback, $F(1, 79) = 15.82, p < .001$. In general, the pattern of means was consistent with predictions, but the pattern was not stronger for participants judging opposite-sex targets with whom romantic possibilities might exist.

Face recognition. The face recognition task was not an easy one for participants: 61.6% of the sample selected an incorrect image (see Figure 5). I hypothesized that a systematic bias in which face was picked would take the form of a two-way interaction between feedback condition and target sex. Specifically, I hypothesized that participants in the acceptance condition would select a more attractive image as representing the target's face and that participants in the rejection condition would select a less attractive image as representing the target's face, compared to participants in the control condition.

Furthermore, I hypothesized that this pattern would be particularly pronounced among participants paired with opposite-sex targets.

Figure 5

Distribution of Selected Images in Face Recognition Task



To test this hypothesis, I conducted a two-way analysis of variance with feedback condition and target sex as independent variables and chosen image (ranging from -5, reflecting choice of the most unattractive morph, through 0, reflecting choice of the veridical image, to +5, reflecting choice of the most attractive morph) as the dependent variable. The predicted two-way interaction was not significant, $F(2, 80) = 0.73, p = .483$. Neither the main effect of feedback condition [$F(2, 80) = 0.67, p = .514$] nor the main effect of target sex [$F(1, 80) = 0.65, p = .423$] were significant. The two-way analysis of variance with feedback condition and target sex predicting chosen image was repeated

with suspicion scores included as a covariate. All effects remained nonsignificant controlling for suspicion.

Moderation by Rapport

Study 3 included a measure of how much rapport participants felt with the selector after seeing his or her picture and reading his or her profile, but before receiving any feedback. Conceivably, the degree of rapport participants felt – an indicator of how excited participants were at the prospect of meeting the target – might have moderated how they assessed the target after receiving feedback. For example, a person feeling good rapport with his or her partner should be particularly likely to appraise the partner's attractiveness in a positively biased fashion.

For heterosexual participants, the nature of the rapport one feels with a same-sex individual likely differs from the nature of the rapport one feels with an opposite-sex individual. Indeed, a two-way analysis of variance predicting rapport from feedback condition and target sex revealed a significant main effect of target sex, $F(1, 81) = 5.39, p = .023$, with participants reporting more rapport with same-sex targets ($M = 4.68, SD = .97$) than with opposite-sex targets ($M = 4.20, SD = .95$). As a result, the interactions of feedback condition and rapport on the dependent variables were tested separately for participants paired with a same-sex target versus participants paired with an opposite-sex target. Interactions were tested with hierarchical regression analyses, with rapport centered separately within the same-sex target and opposite-sex target conditions and feedback condition recoded into two effects codes. The interaction between rapport and feedback condition was created by multiplying centered rapport with each of the two effects codes representing feedback condition. In the hierarchical regression analyses,

rapport was entered in the first step, the two effects coded variables representing feedback condition were entered in the second step, and the two interaction terms were entered in the third step.

Attractiveness judgments. The first regression analysis examined the influence of rapport on same-sex attractiveness judgments. Here, a significant main effect of rapport emerged, $b = .523$, $t = 4.08$, $p < .001$, such that stronger feelings of rapport predicted more flattering attractiveness judgments. The interaction of rapport and feedback condition was not significant, $\Delta R^2 = .061$, $F\text{-change}(2, 35) = 2.31$, $p = .114$.

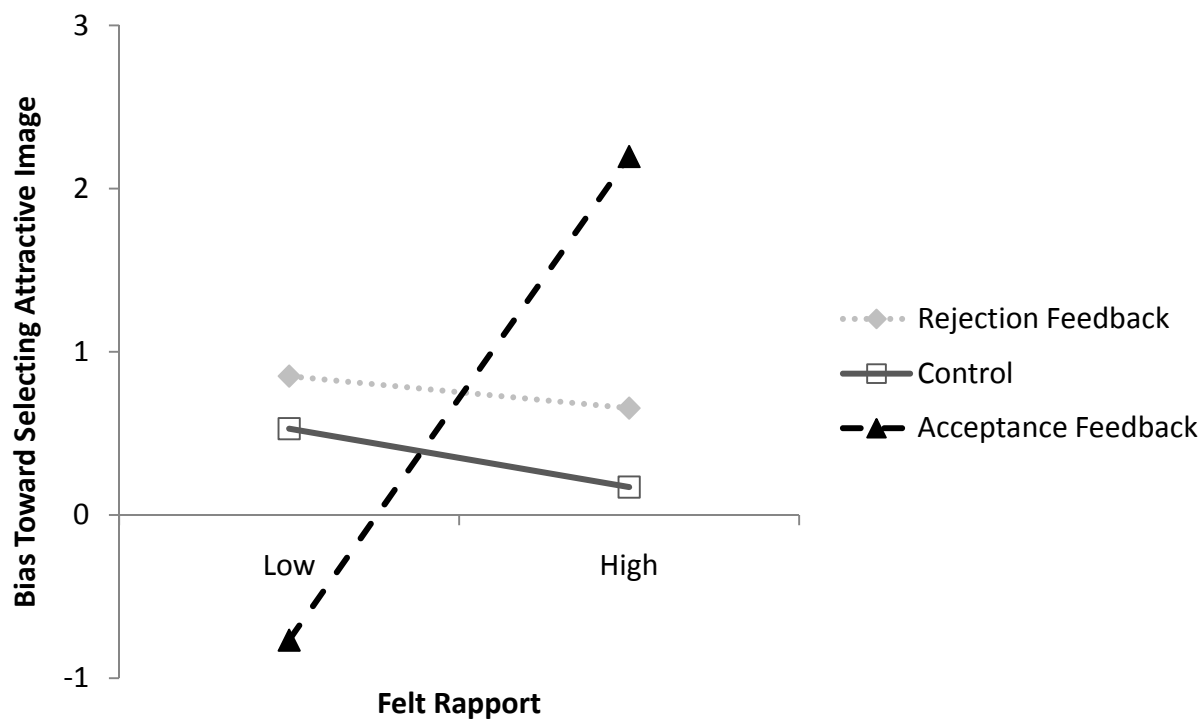
The second regression analysis examined the influence of rapport on opposite-sex attractiveness judgments. Neither the main effect of rapport [$b = .003$, $t = 0.02$, $p = .985$] nor the interaction of rapport and feedback condition [$\Delta R^2 = .052$, $F\text{-change}(2, 38) = 1.17$, $p = .322$] was significant.

Face recognition. The third regression analysis examined the influence of rapport on the face recognition task for participants paired with same-sex partners. Neither the main effect of rapport [$b = .106$, $t = 0.52$, $p = .609$] nor the interaction of rapport and feedback condition [$\Delta R^2 = .003$, $F\text{-change}(2, 36) = 0.06$, $p = .941$] was significant.

The fourth and final regression analysis examined the influence of rapport on the face recognition task for participants paired with opposite-sex partners. Here, there was a marginally significant main effect of rapport, $b = .422$, $t = 1.94$, $p = .060$. This main effect, however, was qualified by a significant interaction between rapport and feedback condition, $\Delta R^2 = .244$, $F\text{-change}(2, 38) = 6.86$, $p = .003$ (see Figure 6).

Figure 6

Mean Selected Image as a Function of Felt Rapport and Feedback Condition for Participants Paired With Opposite-Sex Partners



I decomposed the interaction reported above by testing the simple slope of rapport within each feedback condition separately. The simple slopes of rapport within the rejection condition [$b = -.103$, $t = 0.28$, $p = .778$] and within the control condition [$b = -.188$, $t = 0.48$, $p = .636$] were both nonsignificant. On the other hand, the simple slope of rapport within the acceptance condition was significant, $b = 1.557$, $t = 4.17$, $p < .001$. Thus, participants who received acceptance feedback subsequently recognized the target as much more attractive if they had initially felt high rapport than they did if they initially felt low rapport.

Supplementary Analyses

Physiognomic features. To ascertain whether feedback provided by the target influenced judgments of specific features of the target's face, I conducted two separate two-way multivariate analyses of variance (one for male participants and one for female participants) with feedback condition and target sex as independent variables and the ratings of the selector's physiognomic features as the dependent variables. Among men, the main effect of feedback condition [*Pillai's trace* = 1.810, $F(26, 4) = 1.46$, $p = .390$], the main effect of target sex [*Pillai's trace* = .992, $F(13, 1) = 9.52$, $p = .249$], and the interaction [*Pillai's trace* = 1.747, $F(26, 4) = 1.06$, $p = .543$] were all nonsignificant. These nonsignificant effects were unsurprising, given the small sample of men in Study 3. Among women, a significant main effect of target sex emerged, *Pillai's trace* = .862, $F(19, 42) = 13.85$, $p < .001$, which simply reveals that women perceived the structures of male and female faces to vary. More interestingly, a marginally significant main effect of feedback condition also emerged, *Pillai's trace* = .767, $F(38, 86) = 1.41$, $p = .098$. The interaction between feedback condition and target sex was not significant, *Pillai's trace* = .484, $F(38, 86) = 0.72$, $p = .868$.

I followed up on the marginally significant multivariate main effect of feedback condition among female participants by examining the univariate tests for each physiognomic feature. Five of the 19 facial features were judged as different as a function of feedback condition: kindness of the face, fitness, health, height, and neck shape (all $ps < .05$). Post-hoc simple comparison tests for each feature revealed that rejecting targets were rated to have less kind faces, less fit faces, less healthy faces, and stouter necks than were both accepting targets and control targets. Rejecting targets were also rated as

having shorter faces in comparison to accepting targets, but these ratings did not differ between rejecting and control targets. (See Table 10 for cell means for each physiognomic feature judged to differ across feedback conditions.) In short, when targets provided rejection feedback, women judged particular facial features of the target to be rather unattractive.

Table 10

Mean Ratings of Physiognomic Features Judged to Differ Across Feedback Conditions by Women

Physiognomic Feature	Feedback Condition		
	Rejection	Control	Acceptance
Mean face-kind face	4.25 _a	5.17 _b	5.57 _b
Poor fitness-good fitness	4.80 _a	5.43 _b	5.65 _b
Poor health-good health	5.00 _a	5.65 _b	5.61 _b
Short face-tall face	4.25 _a	4.61 _{ab}	5.00 _b
Stout neck-graceful neck	3.20 _a	4.00 _b	4.22 _b

Note. Means with different subscripts differ significantly between feedback conditions. Higher scores reflect a stronger judgment of the rightmost descriptor for each attribute pair.

Mood. I performed a principal axis factor analysis with a promax rotation on participants' BMIS scores. The scree plot suggested a one-factor solution. The emerging factor reflected general positive mood. Responses on all items with loadings greater than .40 on the single factor, eleven in all, were averaged to create a positive mood composite score (with *fed up*, *sad*, *gloomy*, and *grouchy* ratings reverse scored; $\alpha = .87$). The items

jittery, drowsy, nervous, and tired were excluded in creating the positive mood composite score.

I performed a two-way analysis of variance predicting positive mood composite scores from feedback condition and target sex. A significant main effect of feedback condition was observed, $F(2, 81) = 14.27, p < .001$. In parallel to the effect on attractiveness judgments, participants who received rejection feedback reported a particularly less positive mood ($M = 4.16, SD = 0.93$) compared to participants receiving acceptance feedback [$M = 5.16, SD = 0.72; F(1, 81) = 22.59, p < .001$] and compared to participants in the control condition [$M = 5.13, SD = 0.73; F(1, 81) = 21.06, p < .001$]. In turn, feelings of positive mood were correlated with target attractiveness ratings, $r(85) = .28, p = .010$. Nevertheless, when positive mood was included as a covariate in the primary hypothesis test predicting target attractiveness ratings from feedback condition and target sex, the main effect of feedback condition remained significant, $F(2, 78) = 4.93, p = .010$. Therefore, a decrease in positive mood did not fully account for the concomitant decrease in attractiveness ratings following the receipt of rejection feedback.

The regression analysis revealing an interaction between feedback condition and rapport on the recognition of opposite-sex target faces was repeated, inserting positive mood scores as a covariate. The interaction remained significant controlling for positive mood [$\Delta R^2 = .287, F\text{-change}(2, 37) = 8.53, p = .001$] and exhibited the identical pattern to that observed in the original analysis, suggesting that mood was not the driving force behind the biased recognition.

General impression of the target. I performed a principal axis factor analysis with a promax rotation on participants' impressions of the selector's personality traits.

The scree plot suggested a one-factor solution, with all items exhibited loadings greater than .55, except for *socially dominant*, which had a loading of .36 and was excluded when creating the composite score. A general impression composite score was computed by averaging responses to the remaining fourteen items (with *boring*, *conceited*, and *rude* ratings reverse scored, $\alpha = .92$), such that higher scores reflected a more positive general impression.

I conducted a two-way analysis of variance with feedback condition and target sex as independent variables and general impression composite scores as the dependent variable. This analysis revealed a significant main effect of feedback condition, $F(2, 81) = 53.87, p < .001$. Participants in the rejection condition formed a relatively more negative impression of the target and participants in the acceptance condition formed a relatively more positive impression of the target, compared to participants in the control condition (see Table 11). Furthermore, general impression scores were positively correlated with attractiveness ratings, $r(85) = .63, p < .001$, such that more positive impressions were associated with more flattering ratings of attractiveness. When general impression was included as a covariate in the primary hypothesis test predicting target attractiveness ratings from feedback condition and target sex, the main effect of feedback condition was reduced to nonsignificance, $F(2, 78) = 0.48, p = .618$. As in the previous two studies, the effect of belongingness feedback on physical attractiveness judgments presumably reflects a broader inclination to respond to targets' feedback in kind: when targets offer acceptance to participants, participants judge the target as generally positive, and when targets reject participants, participants judge the target as generally negative.

Table 11

Mean General Impression Ratings Within Each Feedback Condition

Feedback Condition		
Rejection	Control	Acceptance
3.96 ^a	5.27 ^b	5.62 ^c

Note. Means with different subscripts differ significantly between feedback conditions.

The regression analysis revealing an interaction between feedback condition and rapport on the recognition of opposite-sex target faces was repeated controlling for general impression. The interaction remained significant controlling for general impression [$\Delta R^2 = .253$, $F\text{-change}(2, 37) = 7.04$, $p = .003$] and exhibited the identical pattern to that observed in the original analysis. Whereas changes in judgments of attractiveness appeared to be part and parcel of a tendency to change one's general impression of the target in response to belongingness feedback, the pattern of face recognition bias was independent of shifts in general impression.

Discussion

Participants in Study 3 performed a face recognition task that more directly assessed perceptual bias, in addition to providing ratings of target attractiveness. Regarding attractiveness ratings, the results of Study 3 were largely consistent with results from the previous two studies: belongingness feedback influenced judgments of target attractiveness. In particular, the results of Study 3 conformed to the same pattern observed in Study 1: participants rated targets who were rejecting as less physically attractive than those who were accepting and those who were controls. Although

accepting targets were not rated as more physically attractive than were control targets, accepting targets did receive the highest attractiveness ratings. And as in Study 2, the effect of feedback on attractiveness judgments occurred not only for opposite-sex targets, but for same-sex targets as well. As in the prior two studies, mood changes following the feedback did not fully account for differences in attractiveness judgments.

Labile attractiveness judgments in response to belongingness feedback likely stem from nonromantic motivation, as they were evidenced in the present research in response to feedback from both same-sex and opposite-sex targets. These judgmental shifts appear to be one component of a broader tendency to respond to target feedback in tit-for-tat fashion. As in Studies 1 and 2, in Study 3, when the target rejected participants, participants experienced more negative general impressions of the target; when the target accepted participants, participants had more positive general impressions of the target. The effect of feedback specifically on attractiveness judgments was no longer significant when general impressions were controlled for. This tit-for-tat strategy underlying attractiveness judgments, and trait judgments more broadly, was evident in all three studies. A tit-for-tat response strategy might reflect a politeness norm, whereby people provide favorable assessments of others unless given good reason to do otherwise. Because humans are inherently social creatures, it is sensible that people deliberately adjust their judgments of targets who promote or deny opportunities for social affiliation.

In the present data, judgments of the target's particular physiognomic features were altered following belongingness feedback. Rejecting targets were judged to have relatively mean, unfit, unhealthy, short faces perched on stout necks. Rejecting targets in Study 1 were also judged to have relatively mean faces with stout necks. The consistency

in systematic distortions of particular facial features offers tentative evidence that visual perception of facial features is biased by belongingness feedback. But if people share cultural beliefs that mean faces and stout necks are decidedly unappealing features, then biased judgments of such features might represent the general tendency to respond to rejecting targets in a negative manner, consistent with the tit-for-tat strategy, rather than a true distortion in visual perception.

Earlier I argued that perceptions of attractiveness can be dissociated from judgments of attractiveness, with judgments incorporating perceptual feedback, but also broader sources of information extraneous to that type of feedback. I correlated participants' attractiveness ratings with their chosen image in the face recognition task in Study 3 to examine this assertion. These variables were virtually uncorrelated, $r(86) = -.08$, $p = .476$. Because participants were induced to be accurate when performing the face recognition task, their choices on this task presumably reflected their actual perceptions of the target. That these perceptions did not at all correlate with participants' explicit ratings of attractiveness suggests that participants consulted additional sources of information when making their ratings, underscoring that perceptions of attractiveness do not necessarily translate into consistent judgments.

Perceptual bias was ascertained more directly by examining participants' performance on the face recognition task. I hypothesized that the induction of a romantic theme, accomplished through recruiting romantically available participants and by portraying the selector as appealing and available, would result in biased perceptions of the attractiveness of opposite-sex targets in particular. This hypothesis failed to receive support, however. Although I presumed romantic motivation would be particularly

heightened by the protocols introduced in Study 3, it is probable, of course, that some participants simply might not have felt drawn to the selector after viewing his or her picture and description; the selector might not have been some participants' "type." Rather, motivation to perceive the target in a particular light should have operated most strongly among participants who felt a special rapport with the target. Indeed, those participants who felt strong rapport with an opposite-sex target, and who then later received the good news that the target was interested in meeting, subsequently misrecognized the target's face as much more attractive than was actually the case. Interestingly, participants who felt strong rapport, but who were ultimately rejected by the target, did not perceive the target differently compared to participants who felt less rapport.

An intriguing unexpected finding was that participants who felt low rapport with an opposite-sex target and who later received acceptance feedback appeared particularly biased to perceive the target as unattractive. Perhaps this effect reflects a different sort of motivation. When individuals do not reciprocate the positive feelings another directs toward them, they report feeling annoyed and uncomfortable (Baumeister, Wotman, & Stillwell, 1993). Participants feeling low rapport with the target might have been unnerved by the target's excitement to meet, and this discomfort might have resulted in negatively tainted perceptions of the target's attractiveness.

The moderating effect of rapport on attractiveness perceptions was not evident for participants paired with same-sex targets. As well, the moderating effect of rapport on attractiveness perceptions of opposite-sex targets remained significant when controlling for mood and general impressions of the target. Therefore, it appears that when people

feel a connection with an opposite-sex target, eventually learning of that target's interest promotes enhanced perceptions of his or her attractiveness. On the other hand, it appears than when people do not feel drawn to an opposite-sex target, learning that the target is nevertheless interested promotes diminished perceptions of his or her attractiveness.

CHAPTER 5: GENERAL DISCUSSION

I conducted three studies to explore whether belongingness feedback influences physical attractiveness assessments of targets providing that feedback. On the whole, I obtained converging evidence that judgments of attractiveness, in the form of explicit ratings, are systematically altered in response to belongingness feedback in the expected direction. In Studies 1 and 3, targets who rejected participants were subsequently judged to be less attractive than were targets providing accepting or neutral feedback. In Study 2, participants demonstrated a tendency to judge accepting targets as more physically attractive than targets providing rejecting or neutral feedback. These findings are consistent with prior research revealing that physical attractiveness judgments can be informed by nonphysical antecedents (Graziano et al., 1993; Gross & Crofton, 1977; Hassin & Trope, 2000; Hill & Buss, 2008; Jones et al., 2007; Lewandowski et al., 2007; Paunonen, 2006). Past research has uncovered the role of personality traits and peer influence in determining attractiveness judgments; the present set of studies complements this burgeoning literature by showing that the manner in which targets behave toward judges is another important determinant of target attractiveness judgments. Given the powerful effect that others' liking exerts on reciprocal liking in return (e.g., Backman & Secord, 1959; Condon & Crano, 1988; Eastwick et al., 2007; Kenny & La Voie, 1984; Luo & Zhang, 2009; Sprecher, 1998), learning of another's interest or lack thereof ought to be an especially potent elicitor of biased attractiveness appraisals.

One could argue that a change in mood following acceptance or rejection feedback, and not the feedback per se, is the critical elicitor of biased attractiveness judgments. For example, receiving rejection feedback might induce a negative mood in

participants and negative mood might generally render any sort of judgment more negative via mood-congruent recall (Schwarz & Clore, 1983). Belongingness feedback did indeed promote mood states consistent with the feedback valence in all three studies. However, mood did not, in turn, consistently predict attractiveness judgments, and the effect of feedback on attractiveness judgments remained significant in analyses controlling for mood. Study 2 further dismisses the mood account by revealing that feedback uniquely influenced judgments of the feedback provider's attractiveness, but did not affect judgments of a belongingness-irrelevant control target. Thus, changes in mood resulting from the feedback did not taint all subsequent judgments, as posited by mood-congruent recall.

Earlier, I argued that biased attractiveness assessments might stem from social motivation to connect oneself with accepting targets and to distance oneself from rejecting targets. I presumed that this motivation would be especially strong when feedback was provided by opposite-sex targets with whom romantic opportunity might exist. Study 1 offered a degree of evidence for these assertions, revealing that rejecting opposite-sex targets are judged as especially unattractive. But Studies 2 and 3 introduced conditions in which participants made appraisals of same-sex targets, and demonstrated that biased judgments of attractiveness extend to those targets. These findings imply that the impetus to alter judgments of target attractiveness is not likely entirely rooted in romantic motivation.

The mechanism underlying biased judgments of any target providing belongingness feedback appears to be application of a tit-for-tat response strategy. Participants in the present studies might have deliberately modified their attractiveness

judgments, and other judgments of the target more generally, to be consistent with the received feedback. Indeed, across all three studies, the effect of belongingness feedback on attractiveness judgments was accompanied by a parallel effect on general positive impressions of the target (assessed through ratings of traits such as friendliness, funniness, intelligence, conceitedness, and rudeness, among others). Thus, participants might not have visually perceived the target's face any differently as a function of the feedback, but might have modified their ratings of attractiveness nonetheless as part of a strategy for returning the target's feedback in kind. The tit-for-tat responding observed in the present set of studies is consistent with results emerging from other research programs examining belongingness implications. Buckley et al. (2004) observed that participants rejected by an ostensible other participant offered uniformly negative ratings of the ostensible other's attributes and responded to the ostensible other with hostile intentions. Maner, DeWall, Baumeister, and Schaller (2007) reported that targets who were unwilling to meet participants were rated as less sociable and more hostile, and were assigned lesser rewards, than were targets who were simply unable to meet.

The present results converge with other findings (Buckley et al., 2004; Maner et al., 2007) to make clear that belongingness feedback, especially rejection feedback, powerfully colors people's appraisals of the feedback providers. Perhaps the receipt of belongingness feedback quickly and effortlessly engenders a global impression of the provider that serves to either grease the wheels for anticipated interaction or prepare the individual to avoid a dismissing target. Attractiveness judgments are but one component of these global impressions.

The generation of more positive and more negative global impressions in response to acceptance and rejection feedback, respectively, also melds with classic social psychological research on reciprocal liking. Several scholars of interpersonal attraction have noted that liking begets liking and attraction in return (e.g., Backman & Secord, 1959; Condon & Crano, 1988; Eastwick et al., 2007; Kenny & La Voie, 1984; Luo & Zhang, 2009; Sprecher, 1998). When a target expresses an interest or a lack of interest in a perceiver, the perceiver's reciprocation of similar sentiment might be accompanied by supporting beliefs about the target's character. On the whole, then, it appears that people uniformly praise or censure targets after receiving belongingness feedback, developing internally consistent attractiveness judgments, trait inferences, and liking assessments that reflect the valence of the feedback. These global appraisals could serve to justify people's acceptance or dismissal of the target.

I have maintained that judgments of attractiveness can be distinguished from perceptions of attractiveness (see Proffitt, 2006; Westwood & Goodale, 2011, for discussions of similar dissociations), a point I will return to shortly. Accordingly, the three studies reported herein required participants to rate their perceptions of specific physiognomic features of the target's face, following the examples set forth by Hassin and Trope (2000) and Paunonen (2006). Studies 1 and 3 provided evidence that specific facial features are construed differently in response to belongingness feedback. The results of both studies suggest that rejecting targets in particular are seen to have meaner faces and stouter necks – features which likely diminish the overall attractiveness of the face. Other physiognomic features, idiosyncratic to each study, were also rated as less appealing following rejection feedback. These findings provide complementary support

to Hassin and Trope's (2000) and Paunonen's (2006) findings showing that kind and honest targets are seen as having several attractive facial features. Such findings insinuate that face perception is influenced by top-down processes, incorporating nonphysical information about targets.

On the other hand, differential ratings of particular physiognomic features might derive from application of the tit-for-tat strategy, referred to earlier. People presumably recognize that stout necks and mean faces are unappealing characteristics and participants in Studies 1 and 3 might have purposefully ascribed these characteristics to rejecting targets, just as they ascribed other negative qualities. Stronger evidence for biased perception of faces requires dependent measures that more directly reflect the outcomes of visual perception. I included a dependent measure of attractiveness assessment in Study 3 thought to stem more directly from visual perception that has previously been employed in studies of perceptual self-enhancement (Epley & Whitchurch, 2008). This measure involved presenting participants with an array containing eleven images: One image was an exact replica of the target's face participants had seen at the outset of the study, five images were less attractive than the true face and were created by morphing the true face with an unattractive face in varying increments, and five images were more attractive than the true face and were created by morphing the true face with an attractive face in varying increments. Participants were required to select which of the eleven images represented the target's true face and were promised a possible reward for a correct selection. As the reward should have induced an accuracy goal in participants, any bias in face recognition can more confidently be assumed to stem from true perceptual distortion and not from a deliberate attempt to enhance or denigrate the target.

As it turned out, no main effects or interaction between feedback condition and target sex emerged on the face recognition measure. However, to conclude that acceptance or rejection feedback does not taint visual perception is somewhat premature. Although I attempted to present the target as a generally appealing prospective romantic partner to participants, some participants simply were not drawn to the target. To examine more accurately how motivation potentially colors perception, I explored whether participants' feelings of rapport with the target moderated the influence of feedback on face recognition. Interestingly, among participants paired with opposite-sex targets, those who felt especially high rapport with the target and who later received word of the target's interest recognized the target's face as much more attractive than objectively warranted. For participants paired with same-sex targets, rapport did not interact with feedback to predict biased face recognition. The need to perceive prospective same-sex acquaintances as especially attractive is presumably less powerful than the need to perceive prospective romantic partners as especially attractive. Perhaps developing rapport with an opposite-sex individual prepares people to quite literally see that individual as more attractive than he or she really is once the individual reciprocates the interest, as a means of promoting romantic union.

Unexpectedly, participants paired with opposite-sex targets who felt low rapport with the target, but who later learned that the target was interested in meeting, recognized the target's face as less attractive than objectively warranted. This particular effect possibly highlights the operation of a different sort of motivation. These participants might have felt uncomfortable that an opposite-sex individual in whom they felt little interest seemed so keen to meet them (cf. Baumeister et al., 1993). As a consequence,

participants might have perceived the target as decidedly unattractive to distance themselves from the subjectively overzealous target.

In sum, the suite of findings from the present three studies offers tentative evidence that different forms of motivation resulting from belongingness feedback influence different assessments of the feedback providers. The provision of belongingness feedback, especially rejection feedback, leads individuals to develop global judgments of both male and female targets that are consistent with the valence of the feedback. Learning of a prospective romantic partner's interest impels individuals to perceive the target's face as particularly attractive when the individual feels drawn to the target. Conversely, when individuals do not feel drawn to a prospective romantic partner, learning of the target's interest results in unflattering perceptions of the target's physical attractiveness.

Implications

The current findings carry several theoretical and practical implications. As previously mentioned, judgments of physical properties and perceptions of physical properties are not one and the same. The present findings affirm this distinction. In Study 3, judgments of attractiveness and performance on the face recognition task were virtually uncorrelated. Across the three studies, attractiveness judgments of both same-sex and opposite-sex targets were modified following belongingness feedback, but performance on the face recognition task was only influenced for participants paired with opposite-sex targets, and in different directions for participants feeling high versus low rapport with the target. Other research streams examining visually-guided versus

explicitly-stated estimates of physical parameters have uncovered similar dissociations (Westwood & Goodale, 2011; Proffitt, 2006).

People purposefully and strategically modify their initial inclinations before providing explicit judgments (Gawronski & Bodenhausen, 2006). In the present research, participants construed their judgments of target attractiveness so that attractiveness judgments cohered with other target judgments in creating global impressions. People do not willfully choose their perceptions, however; instead, biased visual perception occurs more subtly, being subject to top-down influence from people's motivations and expectations (see Balcetis & Dunning, 2010b, for a review). Past research concluding that nonphysical factors bias physical attractiveness perceptions (Graziano et al., 1993; Gross & Crofton, 1977; Hassin & Trope, 2000; Hill & Buss, 2008; Jones et al., 2007; Lewandowski et al., 2007; Paunonen, 2006) should therefore be revisited. Those studies demonstrated changes in attractiveness ratings or judgments; whether visual perception of attractiveness was likewise influenced remains unanswered. Study 3 offers a potentially viable means of testing biased perceptions of attractiveness: assessing participants' ability to select a true face from an array of faces containing similar-looking distractor morphs (Epley & Whitchurch, 2008). The face recognition paradigm might fruitfully be applied to test whether other purported antecedents of biased attractiveness perceptions (e.g., target personality, peer influence) continue to merit support.

The present research was largely informed by the New Look tradition, a classic approach that explicates the influence of top-down processing on sensory experience (Bruner & Minturn, 1955). New Look theorists contend that perception does not simply reflect the workings of the nervous system and sensory organs, but is also tinged by top-

down psychological processes such as motivation and expectations. Although the New Look gained traction in its early years after accumulating evidence demonstrated biased perception (e.g., Bruner & Goodman, 1947; Bruner & Postman, 1947; Postman & Bruner, 1948; Postman et al., 1948), enthusiasm soon waned in the wake of theoretical challenges and alternative explanations (e.g., Erdelyi, 1974; McCurdy, 1956; Wohlwill, 1966).

The findings of Study 3 in particular buttress other recent attempts to revive the New Look which are occurring most notably in the study of motivated perception (Balcetis & Dunning, 2010b). Study 3 revealed that high rapport with an interested target is related to positively colored perceptions of the target's attractiveness, whereas low rapport with an interested target is related to negatively colored perceptions of the target's attractiveness. Participants in Study 3 were presumably earnest in their attempts to recognize the target's face in order to obtain a possible reward, yet those receiving acceptance feedback still demonstrated bias. Balcetis and Dunning (2006, 2007, 2010a) have similarly reported that motivation can steer participants to see only the preferred percept of ambiguous figures (see Figure 1) or to perceive physical distances to desired objects as shorter. Ambiguous figures by definition portray multiple percepts to the eye and physical distance is impossible to calculate precisely with naked vision; hence, it might be relatively easy to move people's percepts of such stimuli in theoretically predictable ways. The joint influence of rapport and acceptance feedback on perceptions of attractiveness observed in Study 3 demonstrate that bias can be introduced into perceptions of relatively unambiguous, tangible stimuli – human faces. In this way, the

results of Study 3 return the New Look, which often focused on people's (mis)perceptions of simple objects (e.g., coins), to its roots.

Specifically within the domain of physical attractiveness perceptions, the results of Study 3 in particular hint that the development of rapport, or lack thereof, with a target is one plausible mechanism for instigating biased perceptions of opposite-sex targets. This finding supports Paunonen's (2006) observation that the effect of a target's honesty on assessments of his or her attractiveness is mediated by the extent to which participants like the target. Perceiving a "vibe" or "chemistry" with another person might be a prerequisite for subsequently seeing that person as particularly attractive. Conversely, a lack of chemistry with another person, especially when that person nevertheless expresses interest, might instill a preparedness to perceive that person as rather unappealing.

To test further the conjecture that rapport with a target influences perceptions of target attractiveness, researchers could take advantage of the rise of indirect measures for assessing automatic affective associations or so-called "implicit attitudes" (Gawronski, LeBel, & Peters, 2007). Indirect measures such as the Affect Misattribution Procedure (AMP; Payne, Cheng, Govorun, & Stewart, 2005) have been used to assess the valence of people's automatically-activated associations upon encountering specific individuals (e.g., Sritharan, Heilpern, Wilbur, & Gawronski, 2010). These automatic associations might underlie vague, diffuse feelings of rapport or chemistry that people often report experiencing toward targets without fully recognizing why. Demonstrations that positive automatically-activated associations or implicit attitudes toward targets predict perceptions of target attractiveness would lend further credence to the claim that rapport is an important elicitor of biased perceptions. Furthermore, such a link would imply that

the development of rapport and subsequent altered perceptions largely co-occur spontaneously, with little to no interjection of conscious deliberation.

I suggest that biased perceptions of attractiveness occur among both men and women. Although research on mate preferences has repeatedly concluded that men place more value on prospective mates' physical appearance than do women (e.g., Buss, 1989; Li et al., 2002), the bulk of that research simply examines people's explicitly reported preferences. Research examining the actual choices people make when confronted with live partners (e.g., in speed dating settings) reveals that men and women are similarly influenced by potential partners' physical attractiveness (Eastwick & Finkel, 2008; Luo & Zhang, 2009). Moreover, people's implicit, spontaneous preferences for a partner's physical attractiveness are better predictors of interest in real-life partners than are explicitly reported preferences, and implicit attractiveness preferences are not correlated with explicit attractiveness preferences (Eastwick, Eagly, Finkel, & Johnson, in press). Of course, not all potential romantic partners one encounters are hunky beefcakes or beautiful bombshells. But if both men and women tacitly prefer physically attractive romantic partners, perhaps giving average-looking prospective partners the benefit of the doubt via biased perceptions serves to fulfill the implicit need for good-looking partners.

For the most part, rejection feedback carried more weight in shifting participants' assessments of target attractiveness than did acceptance feedback. Acceptance feedback exerted influence under more constrained conditions, altering judgments made by women in Study 2 and interacting with rapport among participants paired with opposite-sex targets in Study 3. The prevailing influence of rejection feedback fits nicely with prior work showing that people fight fire with fire – lambasting those who reject them with

criticism and hostile intentions (e.g., Buckley et al., 2004; Maner et al., 2007; Twenge, Baumeister, Tice, & Stucke, 2001; see Leary et al., 2006, for a review). But interestingly, some work suggests that rejection by one target might instantiate an increased desire for reconnection with other targets. For instance, rejected individuals are more vigilant to signs of possible inclusion by others (e.g., smiling faces, DeWall, Maner, and Rouby, 2009), and rate novel sources of reconnection more positively (Maner et al., 2007), than do nonexcluded individuals. Furthermore, rejected individuals are more generous to novel partners who might serve as sources of reconnection (Maner et al., 2007) than are nonexcluded individuals. Building upon those findings, future research on biased perceptions of attractiveness should explore whether the experience of rejection motivates not only more flattering judgments of possible sources of reconnection, but also more flattering assessments of novel targets' physical attractiveness. Such an effect might be most pronounced among individuals experiencing romantic rejection who subsequently encounter novel opposite-sex partners and could underlie so-called romantic "rebound," whereby newly single individuals hastily forge new romantic or sexual relationships.

In addition to the theoretical implications just discussed, the present findings offer the practical implication that playing "hard to get" is a suboptimal strategy for promoting romantic attraction. Playing hard to get involves appearing distant and uninterested in a potential romantic partner so as to avoid coming across as overly needy and desperate (for a discussion, see Walster, Walster, Piliavin, & Schmidt, 1973). Often, mainstream sources of dating advice espouse the idea that playing hard to get is a surefire strategy for increasing one's appeal. In the present set of studies, however, direct acceptance

feedback in the form of expressing interest in meeting never resulted in a decrease in judgments or perceptions of attractiveness, nor in a decrease in general impressions more broadly. In fact, in Study 2, participants provided more favorable attractiveness and trait assessments following acceptance feedback. Thus, truthfully expressing one's interest might better serve the goal of promoting reciprocal interest than does playing hard to get, or at the very least, does not impair one's chances.

One important qualification on the utility of expressing interest is that expressions of interest should be selectively targeted. Eastwick et al. (1997) noted that individuals who appear unselective in their interest – those who fawn over everybody they meet – are not particularly liked in return by any given target. Expressions of interest are most likely to elicit reciprocal feelings when they are genuinely expressed for one specific target over and above other possible targets.

Expressions of interest might also work best when subtle. Whitchurch, Wilson, and Gilbert (2011) observed that women were more attracted to men when the men's expression of liking for the women was uncertain than when the men's expression of liking was more obvious. Similarly, Study 3 in the present research revealed that bold expressions of interest can backfire when recipients are not overly drawn to the target. Participants who felt low rapport with the target perceived the target as relatively unattractive if the target provided acceptance feedback. Expressions of interest or acceptance positively biased participants' perceptions of target attractiveness only when participants felt strong rapport with the target. In sum, an individual seeking romance is well-advised to convey his or her interest in potential partners, but in a selective, subtle

manner until he or she is more certain that the target is receptive to a possible relationship.

Limitations and Future Directions

The present set of studies contained certain methodological and conceptual limitations that stimulate ideas for future research. Perhaps most obviously, the basic paradigm of the three studies was somewhat contrived. Participants were told that they were paired with another participant, but never had an opportunity to meet their partner or even observe their partner in a live setting. Because studies involving similar forms of deception are relatively common in social psychology, some participants might have been suspicious as to whether the supposed other person actually existed. Several precautions were instituted, however, to increase the realism of the experimental context. In Study 1, participants were asked to place their belongings next to a backpack that ostensibly belonged to the other participant. The appearance of the backpack should have made more plausible the existence of a second person. In Studies 2 and 3, participants were asked to wait in a large room before being taken to the testing room. In these two studies, the experimenter greeted participants a couple of minutes past the scheduled start time and remarked that he or she was awaiting the arrival of an additional person. After getting the true participant started by asking him or her to read the consent form, the experimenter would pretend that he or she was going to look once again for the ostensible other participant. Additionally, as some participants in the first two studies expressed disbelief about the existence of the ostensible other person because their own photographs were never taken, the experimenter took photographs of the real participants in Study 3 to bolster the credibility of the cover story.

Overall, the attempts to lend credibility to the cover story were reasonably successful – many participants across the three studies appeared to be genuinely surprised upon learning of the ruse. Participants' suspicion was not quantified in Studies 1 and 2, however. The majority of participants did not indicate being suspicious, but admittedly, several participants did report some degree of wariness, though all were retained in the analyses. To allow for analyses controlling for suspicion, participants' answers to a funneled suspicion probe in Study 3 (see Appendix E) were quantified so that suspicion scores could be included as a covariate in the tests of hypotheses. When primary analyses in Study 3 were performed a second time including suspicion scores as a covariate, the pattern of results remained constant. Given the similarity in methodological design across the three studies, the results of analyses controlling for suspicion in Study 3 instill confidence that the degree of suspicion indicated by some participants had a negligible impact on the present set of results.

Nonetheless, future research on biased appraisals of attractiveness can largely circumvent participant suspicion by involving live confederates with whom participants interact. For example, participants could engage with a confederate posing as another participant in a getting acquainted task and then later receive belongingness feedback. Not only would this procedural element make the existence of the other person much more believable, but it would also more closely parallel how people get to know each other better in real-world contexts (i.e., in face-to-face dialogue rather than computer-mediated information exchange).

Another methodological limitation is that the experimental setting was not explicitly romantic. I argued that judgments and perceptions of other people's

attractiveness should be most biased for opposite-sex targets, as assessments of opposite-sex targets might reflect romantic motivation to approach interested individuals and avoid uninterested individuals. To create a subtle romantic context, the questions participants answered of themselves as part of the advertiser role were taken from a popular online dating website (www.eharmony.com). Moreover, in Study 3, the vast majority of participants were single and the romantic appeal and availability of the ostensible second participant were made more salient. Still, the nature of the possible meeting between the real and ostensible participant involved the rather mundane task of working together on a jigsaw puzzle and thus might not have fully activated a romantic mindset in most participants.

A weak romantic induction might explain why acceptance feedback in particular tended not to produce enhanced appraisals of target attractiveness. The sting of rejection, on average, exerted greater influence on participants than did the thrill of acceptance, and this was true for both opposite-sex and same-sex judgments. Perhaps acceptance from a stranger, whether the stranger is a man or a woman, is of little consequence in relatively mundane settings that afford scant probability of future contact, as characterized by the present experimental paradigm. On the other hand, rejection, even by strangers always hurts. Rejection by strangers triggers physiological responses akin to physical pain (Eisenberger, Lieberman, & Williams, 2003) and results in negative self-perceptions even when the rejection comes from undesirable sources (e.g., KKK members, Gonsalkorale & Williams, 2007). Acceptance feedback from opposite-sex targets might be more consequential in contexts which are unequivocally romantic. Future research could employ a procedure in which a confederate chooses the real participant over a second

confederate (or vice versa) for a lunch date after asking both a series of questions, as in the popular television program *The Dating Game* (Simpson, Gangestad, Christensen, & Leck, 1992). One would expect biased appraisals of the chooser's attractiveness to be more evident in such a procedure.

Another reason why acceptance feedback might have been relatively ineffectual for promoting enhanced appraisals of target attractiveness is because negative information looms larger than positive information across a wide spectrum of psychological phenomena. For example, bad information is processed more thoroughly than good information, negative impressions of others form more readily than positive impressions, and negative feedback from others more strongly influences self-esteem than does positive feedback (for a review, see Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). In retrospect then, it is not overly surprising that rejection feedback carried greater implications for ratings of target attractiveness than did acceptance feedback. Acceptance feedback might induce more subtle effects, as in Study 3 where participants sensing high rapport with an opposite-sex target visually recognized the target as especially attractive in response to receiving acceptance feedback.

One issue that is not entirely clear is whether the face recognition task employed in Study 3 was a measure of participants' visual perception of the target's face or a measure of participants' representation of the target's face in memory. In making their selection, participants might have relied on a distorted memory of the target's face. The face recognition task has been used in previous research to demonstrate perceptual self-enhancement in assessing one's own attractiveness (Epley & Whitchurch, 2008); therefore, I believed that using this paradigm was a worthwhile initial foray into studying

perceptual biases of others' attractiveness. Furthermore, biases in ongoing visual perception might reflect the mapping of biased memories onto currently perceived targets, such that they are perceived in line with the applied memories. In this way, mental representations and visual perceptions are virtually one and the same. Balci and Dunning (2006) argued that one mechanism underlying motivated perception is the operation of a "perceptual set" – the accessibility in memory of features characteristic of what one wishes to see, such that ambiguous stimuli are perceived to possess the features that place them in the desired category.

Applied to Study 3, participants who felt strong rapport with an opposite-sex, available target, and who later learned that the target was interested in meeting, might subsequently have felt motivated to perceive that target as attractive and formed an image of a physically appealing mate in memory. When subsequently performing the face recognition task, these participants might have mapped their perceptual set of an attractive person onto the images resembling the target, leading them to select an attractive distractor image as representing the target's true face. Similarly, participants who felt low rapport with an opposite-sex, available target who seemed eager to meet might have developed an unattractive perceptual set that they applied to the face recognition task, resulting in selection of a particularly unattractive face.

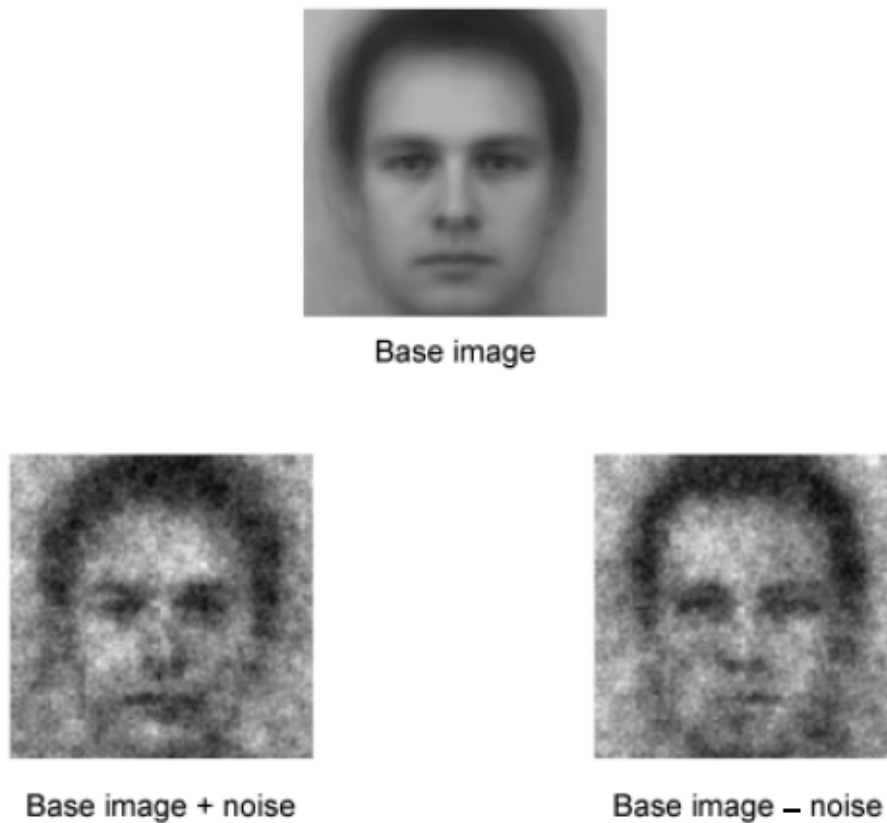
One promising method to examine perceptions of attractiveness involves participants performing several trials in which they choose which of two degraded images is a better representative of a given category (e.g., outgroup member). Each pair of degraded images is generated from the same base image, which is not necessarily an exemplar of the category. For a given pair, one degraded image is created by adding a

pixilated random-noise pattern to the base image and the other degraded image is created by subtracting the same random-noise pattern from the base image (see Figure 6).

Different trials are created by using a different random-noise pattern for each.

Figure 6

Example of Creating One Pair of Degraded Images from a Base Image



Note. This figure was reproduced from Figure 1 in Dotsch, Wigboldus, Langner, and van Knippenberg (2008).

The chosen images across all trials and all participants are averaged into one composite image. The composite image is rated by a separate sample of participants on attributes of interest to the researcher, typically attributes (e.g., criminal, untrustworthy) thought to be relevant to the category into which the chosen faces were placed (e.g.,

outgroup member). Using this procedure, Dotsch, Wigboldus, Langner, and van Knippenberg (2008) asked Dutch participants to select the more Moroccan-looking face from pairs of degraded faces over several trials. A composite selection averaged across trials and participants was created separately for low prejudice participants, moderate prejudice participants, and high prejudice participants. Fascinatingly, a separate sample of participants rated the high prejudice composite image as looking especially criminal and untrustworthy. Because the base image from which all degraded images were generated was *not* Moroccan and was emotionally neutral, Dotsch et al.'s (2008) results imply that high-prejudice participants read their stereotypes of Moroccans into the faces during the choice task, such that they literally created faces personifying the stereotypes.

Extending the Dotsch et al. (2008) paradigm to perceptions of belongingness-relevant targets, future research could create several different pairs of degraded images of the target face. After receiving belongingness feedback, participants would complete several trials in which they choose which degraded face in each pair most closely resembles the target's true face, which would be shown on the screen during each trial. A composite image could be created for each feedback condition (or combined conditions involving target sex, participant sex, rapport, etc.) and rated on attractiveness by a separate sample of participants. If different composite images are rated as more or less attractive, this result would suggest that participants truly perceived the target differently as a function of condition(s).

Conclusion

Taken together, the present set of studies reveals that belongingness feedback carries important consequences for how the providers of such feedback are judged, and in

some cases, even perceived more fundamentally. Changes in mood stemming from belongingness feedback were not fully responsible for changes in attractiveness appraisals and biased appraisals were specifically reserved for the feedback provider and did not generalize to belongingness-irrelevant targets.

In two of three studies, targets supplying rejection feedback were uniformly condemned – not only were rejecting targets judged as particularly unattractive, they were broadly devalued on a constellation of attributes. In one study, acceptance feedback elicited a uniformly positive response toward the target – the target was judged as especially physically attractive and deemed to possess a wide assortment of virtues. In all three studies, the specific effect of belongingness feedback on attractiveness judgments was not evident when general impressions were controlled for. Moreover, construed judgments of attractiveness and other traits were extended toward both opposite-sex and same-sex targets. It appears, then, that shifting judgments of attractiveness are one component of a strategy whereby any target supplying belongingness feedback is responded to in a manner consistent with the valence of his or her feedback.

The New Look (Bruner & Minturn, 1955), which sought to synthesize the operation of top-down processes, such as motivation, with bottom-up determinants in generating perception, is not particularly applicable to the present findings concerning attractiveness judgments. Instead, the patterns of attractiveness judgments observed in the present research likely derived from a strategy to reciprocate target feedback – whether the judgments at all reflected concurrent biases in visual perception is unclear. I contend, therefore, that prior research concluding that people are literally seen in a different light as a function of nonphysical information (Graziano et al., 1993; Gross & Crofton, 1977;

Hassin & Trope, 2000; Hill & Buss, 2008; Jones et al., 2007; Lewandowski et al., 2007; Paunonen, 2006) requires revisitation. As that research employed judgments or ratings of attractiveness, the findings are equivocal as to whether the observed changes in judgments stem from changes in perceptions, applications of deliberate strategies, or a mix of the two.

Some of the past work on nonphysical antecedents of physical attractiveness appraisals has examined ratings of specific physiognomic features, showing that certain features are construed differently as a function of knowledge about the target's personality (Hassin & Trope, 2000; Paunonen, 2006). The present studies also provided some evidence that specific facial features are evaluated differently depending on the nature of received belongingness feedback. Thus, some preliminary support is accruing for the supposition that target information can specifically influence low-level visual perception. Stronger support, however, can be adduced from the application of paradigms that directly tap visual perception. Study 3 provided initial promise that such paradigms can reveal perceptual distortions: participants who received acceptance feedback from an opposite-sex target erroneously selected particularly attractive or unattractive images as representing the target's true face, even when participants were motivated to make accurate selections. This finding suggests that motivation to approach desired targets and avoid undesired targets can directly color visual perception, consistent with the central New Look thesis (Bruner & Miniturn, 1955) and recent research inspired by the New Look (Balcetis & Dunning, 2010b; Proffitt, 2006). Future research should continue to clarify when and how low-level visual perception of others' appearance is touched by higher-order, top-down processing.

In conclusion, the present research adds to a growing literature that reveals that we do indeed judge covers by their books – the qualities of individuals and how they behave toward us exert profound influence on how we judge their outward appearance. Yet, the present research further demonstrates that we judge both a person’s outward appearance and internal attributes based on snippets of information pertaining to whether one likes us or not, particularly when a person provides rejection feedback. Intriguingly, under specific conditions, we might truly perceive a person’s “cover” in biased fashion and subsequent research should seek to determine more fully when and how visual perception of social targets changes. Given the pervasive human tendencies to seek meaningful social relationships (Baumeister & Leary, 1995) and to make rapid ascriptions of others based on appearance cues (Zebrowitz & Montepare, 2008), research in this domain offers enormous potential to better understand the dynamic interplay of social information and physical cues in determining both romantic attraction and social affiliation more generally.

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Appendix A

Open-Ended Questions Answered by Participants (Advertisers) and Purportedly Sent to the Target (Selector)

1. What are you most passionate about?
2. Describe the last movie that you saw and enjoyed. What was it about? What did you like most about it?
3. Other than your appearance, what is the first thing that people notice about you?

Appendix B

Belongingness Feedback Provided by the Target (Selector)

Rejection condition. That guy/girl seems like somebody I wouldn't like very much. I didn't think his/her answers were very interesting...I'm definitely not up for meeting him/her and want to work alone on the next part of the study.

Indifferent (control) condition (Studies 1 and 2). That guy/girl seems like somebody I'd like ok I guess. I thought his/her answers were kind of interesting...I can definitely go either way about meeting him/her. If it's easier for me to work with him/her in the next part of the study, then I will...but I don't mind working alone too if that's easier.

Ambiguous (control) condition (Study 3). I read over your answers...so I definitely figured out what I want to do for the next part of the study. Is the person doing the study going to check in with me?

Acceptance condition. That guy/girl seems like somebody I'd like a lot. I thought his/her answers were really interesting...I'm definitely up for meeting him/her and working together on the next part of the study.

Note. The word 'definitely' was purposefully misspelled in creating these statements to lend credibility to the cover story that they originated from another first-year student.

Appendix C

Attractiveness and Physiognomic Feature Dependent Measures

1. **Physically attractive**
2. Mature-faced/baby-faced
3. Masculinity/femininity
4. Kindness
5. **Good-looking**
6. Fitness
7. Health
8. **Easy on the eyes**
9. Height
10. Weight
11. Eye size
12. Eye spacing
13. Eye shape
14. Nose size
15. Hair texture
16. Lip size
17. Chin size
18. Skin texture
19. Neck shape
20. Face shape
21. Cheek structure
22. Symmetry

Note. Attractiveness dependent measures are in bold.

Appendix D

Statement Provided by Target (selector) in Study 3

Hi! I'm Brian/Breanne and i'm in my first year at Western! i'm living in rez and i love it here so far! I just celebrated my 19th b-day, so i dont need fake ID anymore haha. i think i may do a psych major but i'm still undecided. i really enjoy biking and camping...anything outdoors! oh, im really excited to try snoboarding this winter too! i'm really into movies, especially comedies. i'm single right now, guess you could say im looking haha...I usually meet people pretty easily, i'm a laidback person, go with the flow. Guess thats all there is to say!

Note. The grammatical and spelling errors are purposeful to reflect more accurately how a young university student might communicate via an informal, electronic medium.

Appendix E

Funneled Suspicion Probe Used in Study 3

[Notes of participants' responses to the following questions were recorded to ascertain their level of suspicion. Furthermore, a quantitative coding scheme was employed such that the earlier a participant expressed clear suspicion, the higher score he or she received. Suspicion scores are listed in parentheses for each question.]

Question 1: (*Suspicion Score: 5*)

Do you have any questions about your participation in the study?

Question 2: (*Suspicion Score: 4*)

Was the purpose of the study clear and did the procedure make sense?

Question 3: (*Suspicion Score: 3*)

Different participants react to studies in different ways so it's really helpful to learn more about each participant's own unique experiences in this study. Did you have any particular feelings about or reactions to the study that influenced your responses? What did you base your responses on?

Question 4: (*Suspicion Score: 2*)

Was there any aspect of the procedure that you found odd, confusing, or disturbing?

Question 5: (*Suspicion Score: 1*)

Do you think there may have been more to this study than meets the eye? **[If so, participants were asked to elaborate on their suspicions or questions. Participants were asked how their thoughts might have affected their responses.]**

Ancillary Question:

What hypothesis do you think we are testing with this study? **[No participant correctly deduced the hypothesis.]**

Note. Follow-up questions and discussions were uniquely tailored to each participant's response. Subsequent questions were skipped if participants' earlier responses rendered that question redundant. If participants inquired about the nature of the study at any point, they were told that this query would be addressed after asking a few more questions of the participant. If participants' level of detail in answering later questions made clear that they were likely more suspicious than their responses to the earlier questions indicated, the experimenter was given leeway to assign a slightly higher suspicion score.

Appendix F

Ethics Approval Forms



Department of Psychology The University of Western Ontario
 Room 7418 Social Sciences Centre,
 London, ON, Canada N6A 5C1
 Telephone: (519) 661-2067 Fax: (519) 661-3961

Use of Human Subjects - Ethics Approval Notice

Review Number	08 10 04	Approval Date	08 10 02
Principal Investigator	Lorne Campbell/Chris Wilbur	End Date	09 09 30
Protocol Title	Getting to know others		
Sponsor	n/a		

This is to notify you that The University of Western Ontario Department of Psychology Research Ethics Board (PREB) has granted expedited ethics approval to the above named research study on the date noted above.

The PREB is a sub-REB of The University of Western Ontario's Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario. (See Office of Research Ethics web site: <http://www.uwo.ca/research/ethics/>)

This approval shall remain valid until end date noted above assuming timely and acceptable responses to the University's periodic requests for surveillance and monitoring information.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the PREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of research assistant, telephone number etc). Subjects must receive a copy of the information/consent documentation.

Investigators must promptly also report to the PREB:

- changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- all adverse and unexpected experiences or events that are both serious and unexpected;
- new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to the PREB for approval.

Members of the PREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the PREB.

Clive Seligman Ph.D.

Chair, Psychology Expedited Research Ethics Board (PREB)

The other members of the 2087-2009 PREB are: David Dozois, Bill Fisher, Riley Hinson and Steve Lupker

CC: UWO Office of Research Ethics

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Use of Human Subjects - Ethics Approval Notice

Review Number	09 03 12	Approval Date	09 03 16
Principal Investigator	Lorne Campbell/Chris Wilbur	End Date	09 12 24
Protocol Title	First impressions		
Sponsor	n/a		

This is to notify you that The University of Western Ontario Department of Psychology Research Ethics Board (PREB) has granted expedited ethics approval to the above named research study on the date noted above.

The PREB is a sub-REB of The University of Western Ontario's Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario. (See Office of Research Ethics web site: <http://www.uwo.ca/research/ethics/>)

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- c) new information that may adversely affect the safety of the subjects or the conduct of the study.

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Members of the PREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the PREB.

Clive Seligman Ph.D.

Chair, Psychology Expedited Research Ethics Board (PREB)

The other members of the 2008-2009 PREB are: David Dozois, Bill Fisher, Riley Hinson and Steve Lupker

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Use of Human Subjects - Ethics Approval Notice

Review Number	10 09 07	Approval Date	10 09 13
Principal Investigator	Lorne Campbell/Chris Wilbur	End Date	11 04 30
Protocol Title	How do people build bonds and get to know others		
Sponsor	n/a		

This is to notify you that The University of Western Ontario Department of Psychology Research Ethics Board (PREB) has granted expedited ethics approval to the above named research study on the date noted above.

The PREB is a sub-REB of The University of Western Ontario's Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario. (See Office of Research Ethics web site: <http://www.uwo.ca/research/ethics/>)

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During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the PREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of research assistant, telephone number etc). Subjects must receive a copy of the information/consent documentation.

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Members of the PREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the PREB.

Clive Seligman Ph.D.

Chair, Psychology Expedited Research Ethics Board (PREB)

The other members of the 2009-2010 PREB are: David Dozois, Bill Fisher, Riley Hinson and Steve Lupker

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CHRISTOPHER J. WILBUR
 DEPARTMENT OF PSYCHOLOGY, SOCIAL SCIENCE CENTRE
 UNIVERSITY OF WESTERN ONTARIO
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APPOINTMENTS

2011 – present Assistant Professor, Psychology
 University of Wisconsin – Marathon County

EDUCATION

2011 Doctor of Philosophy (Ph.D.), Social Psychology
 University of Western Ontario
Thesis: Judging Covers by Their Books: Malleable Attractiveness Appraisals in Response to Belongingness Feedback

2005 Master of Arts (M.A.), Social Psychology
 University of Western Ontario
Thesis: Making Sense of Humor: Differences in Men's and Women's Humor Strategies Within Mating Contexts

2001 Bachelor of Science (B.Sc.), Scholar's Elective Program (Psychology)
 University of Western Ontario

AWARDS AND SCHOLARSHIPS

2006 *Leola A. Neal Award*
 University of Western Ontario
 Top MA thesis in Department of Psychology
 Value: \$450

2005-2008 *Canada Graduate Scholarship*
 Three-Year Doctoral Fellowship
 Social Sciences and Humanities Research Council (SSHRC)
 Value: \$35,000/year (total: \$105,000)

2005-2006 *Ontario Graduate Scholarship (declined)*
 Ontario Graduate Scholarship Program
 Value: \$15,000

2004-2005 *Ontario Graduate Scholarship*
 Ontario Graduate Scholarship Program
 Value: \$15,000

AWARDS AND SCHOLARSHIPS

2002-2003	<i>Graduate Academic Scholarship</i> Arizona State University Value: \$8,520
2002	<i>Finalist, Four-Year Doctoral Fellowship</i> Social Sciences and Humanities Research Council (SSHRC) Value: \$17,500/year (total: \$70,000)
2001-2002	<i>Graduate Academic Scholarship</i> Arizona State University Value: \$8,520
2001-2002	<i>Regents' Academic Scholarship</i> Arizona State University Value: \$2,508
2001	<i>President's Scholarship (declined)</i> University of Western Ontario Value: \$24,000
2001	<i>Ontario Graduate Scholarship (declined)</i> Ontario Graduate Scholarship Program Value: \$15,000
2001	<i>R.B. Libby Gold Medal</i> University of Western Ontario Highest academic standing in B.Sc. Psychology program
1998-2001	<i>Dean's Honors List</i> University of Western Ontario
2001	<i>University of Western Ontario Scholarship</i> University of Western Ontario Value: \$200
2000	<i>University of Western Ontario In-Course Scholarship</i> University of Western Ontario Value: \$700
2000	<i>Edna Jeffrey Scholarship</i> University of Western Ontario Value: \$350
1999	<i>University of Western Ontario In-Course Scholarship</i> University of Western Ontario Value: \$700

AWARDS AND SCHOLARSHIPS

1997-1998 *Western Academic Scholarship of Excellence*
 University of Western Ontario
 Value: \$2,000

PUBLISHED PAPERS

Wilbur, C.J., & Campbell, L. (in press). Swept off their feet? Females' strategic mating behavior as a means of supplying the broom. In M. Fisher, J.R Garcia, R.S. Chang, & S.L. Strout (Eds.). *Evolution's Empress: How Females Shape Human Adaptation*.

Wilbur, C.J. & Campbell, L. (2011). Humor in romantic contexts: Do men participate and women evaluate? *Personality and Social Psychology Bulletin*, 37, 918-929.

Wilbur, C.J., & Campbell, L. (2010). What do women want? An interactionist account of women's mate preferences. *Personality and Individual Differences*, 49, 749-754.*

*Research covered by Men's Health Magazine (December 2010)

Sritharan, R., Heilpern, K., **Wilbur, C. J.**, & Gawronski, B. (2010). I think I like you: Spontaneous and deliberate evaluations of potential romantic partners in an online dating context. *European Journal of Social Psychology*, 40, 1062-1077 .

Campbell, L., & **Wilbur, C.J.** (2009). Are the traits we value in potential mates the traits they value in themselves? An analysis of sex differences in the self-concept. *Self and Identity*, 8, 418-446.

Esses, V.M., Wagner, U., Wolf, C., Preiser, M., & **Wilbur, C.J.** (2006). Perceptions of national identity and attitudes toward immigrants and immigration in Canada and Germany. *International Journal of Intercultural Relations*, 30, 653-669.

Gawronski, B., Hoffman, W., & **Wilbur, C.J.** (2006). Are "implicit" attitudes unconscious? *Consciousness and Cognition*, 15, 485-499.*

*Ranked #9 of the Top 10 Most Frequently Cited Articles Published in Consciousness and Cognition in 2005-2010 (June 14, 2010)

van Anders, S.M., Vernon, P.A., & **Wilbur, C.J.** (2006). Finger-length ratios show evidence of hormone transfer in females from opposite-sex twin pairs. *Hormones and Behavior*, 49, 315-319.

Maner, J.K, Kenrick, D.T., Becker, D.V., Delton, A.W., Hofer, B., **Wilbur, C.J.**, & Neuberg, S.L. (2003). Sexually selective cognition: Beauty captures the mind of the beholder. *Journal of Personality and Social Psychology*, 85, 1107-1120.

INVITED TALKS

- Wilbur, C.J.** (2010, November). *Beauty in the beast: Biased perceptions of attractiveness in response to liking feedback*. Talk given to the Western Psychology Undergraduate Association, University of Western Ontario, London, ON.
- Wilbur, C.J.** (2008, July). *The application and teaching of statistics in psychology*. Talk given at Ilia Chavchavadze State University, Tbilisi, Georgia.
- Wilbur, C.J., & Campbell, L.** (2008, July). *Humor in romantic contexts: Do men participate and women evaluate?* Talk given at Tbilisi State University, Tbilisi, Georgia.
- Wilbur, C.J., & Campbell, L.** (2007, May). *Humor in romantic contexts: Do men participate and women evaluate?* Symposium talk given at the annual meeting of the Human Behavior and Evolution Society, Williamsburg, VA.

CONFERENCE PAPERS

- Campbell, L., & **Wilbur, C.J.** (2011, June). *What do women want? An interactionist account of women's mate preferences*. Poster presented at the annual meeting of the Human Behavior and Evolution Society, Montpellier, France.
- Wilbur, C.J., & Campbell, L.** (2011, January). *The joke is the window to the soul: Evaluation and inferences of humor*. Poster presented at the annual meeting of the Society for Personality and Social Psychology, San Antonio, TX.
- Wilbur, C.J., & Campbell, L.** (2010, January). *Beauty in the beast: Inferred liking as an antecedent of physical attractiveness judgments*. Poster presented at the annual meeting of the Society for Personality and Social Psychology, Las Vegas, NV.
- Wilbur, C.J., & Campbell, L.** (2009, August). *Beauty in the beast: Inferred liking as an antecedent of physical attractiveness judgments*. Poster presented at the 12th Ontario Symposium, London, ON.
- Wilbur, C.J., Caron, J., & Campbell, L.** (2008, February). *More than a feeling: Unconscious thought and mate choice*. Poster presented at the annual Western-Waterloo meeting, London, ON.
- Wilbur, C.J., Caron, J., & Campbell, L.** (2008, February). *More than a feeling: Unconscious thought and mate choice*. Poster presented at the annual meeting of the Society for Personality and Social Psychology, Albuquerque, NM.
- Wilbur, C.J., Campbell, L.** (2007, January). *Humor in romantic contexts: Do men participate and women evaluate?*. Poster presented at the annual meeting of the Society for Personality and Social Psychology, Memphis, TN.
- Wilbur, C.J., & Campbell, L.** (2006, January). *Making sense of humor: Differences in men's and women's humor strategies within mating contexts*. Poster presented at the annual meeting of the Society for Personality and Social Psychology, Palm Springs, CA.

CONFERENCE PAPERS

van Anders, S.M., Vernon, P.A., & **Wilbur, C.J.** (2005, August). *Digit ratios in opposite-sex twins show evidence of prenatal hormone transfer*. Poster presented at the International Behavioral Development Symposium, Minot, ND.

Wilbur, C.J., Campbell, L. (2005, January). *Whether just for fun or in the long run: The appeal of ambition in both short-term and long-term romantic relationships*. Poster presented at the annual meeting of the Society for Personality and Social Psychology, New Orleans, LA.

Wilbur, C.J., Shapiro, J.R., & Neuberg, S.L. (2004, January). *Different emotions from different threats: a sociofunctional analysis of intergroup relations*. Poster presented at the annual meeting of the Society for Personality and Social Psychology, Austin, TX.

TEACHING EXPERIENCE

Summer 2011	<i>Co-Instructor</i> <i>Social Psychology</i> University of Western Ontario
Winter 2011	<i>Instructor</i> <i>Social Psychology</i> King's University College
Winter 2011	<i>Instructor</i> <i>Online Social Psychology</i> University of Western Ontario
Summer 2010	<i>Instructor</i> <i>Social Psychology</i> University of Western Ontario
Summer 2009	<i>Instructor</i> <i>Social Psychology</i> University of Western Ontario
Summer 2008	<i>Visiting Psychology Curriculum Advisor</i> (with Lorne Campbell) Tbilisi State University and Ilia Chavchavadze State University Tbilisi, Georgia
Summer 2008	<i>Instructor</i> <i>Social Psychology</i> University of Western Ontario
Winter 2008	<i>Instructor</i> <i>Interpersonal Relationships</i> University of Western Ontario

TEACHING EXPERIENCE

- Summer 2007 *Guest Lecturer for Human Sexuality* (Instructor: Andrea Lawson)
Attraction and Mating: An Evolutionary Perspective
 University of Western Ontario
- Summer 2006 *Guest Lecturer for Human Sexuality* (Instructor: Corey Isaacs)
Attraction and Mating: An Evolutionary Perspective
 University of Western Ontario
- 2010-2011 *Teaching Assistant for Adult Psychopathology*
 Course Instructor: Dr. Cathy Chovas
 King's University College, University of Western Ontario
- 2010-2011 *Teaching Assistant for Child Psychopathology*
 Course Instructor: Dr. Cathy Chovas
 King's University College, University of Western Ontario
- 2008-2009 *Teaching Assistant for Honor's Thesis Program*
 Coordinator: Dr. William Roberts
 University of Western Ontario
- 2004-2005 *Teaching Assistant for Introduction to Statistics for Psychology*
 Course Instructor: Dr. Stephen Lupker
 University of Western Ontario
- Summer 2002 *Teaching Assistant for Introduction to Social Psychology*
 Course Instructor: Dr. Steven Neuberg
 Arizona State University
- Winter 2002 *Teaching Assistant for Introduction to Statistics for Psychology*
 Course Instructor: Dr. Patrice Gibbs
 Arizona State University
- Fall 2001 *Teaching Assistant for Introduction to Social Psychology*
 Course Instructors: Drs. Steven Neuberg and Robert Short
 Arizona State University

MENTORING EXPERIENCE

- 2008-2009 Honor's Thesis Supervision
 Erica Lundberg
 University of Western Ontario
Nominated for W.J. McClelland Thesis Award
- 2008-2009 Independent Study Supervision
 John Winter
 University of Western Ontario

MENTORING EXPERIENCE

- 2006-2007 Honor's Thesis Supervision
Jennifer Caron
University of Western Ontario
- 2006-2007 Honor's Thesis Supervision
Ashley Frazer
University of Western Ontario

STATISTICAL TRAINING

- Fall 2002 *Multivariate Statistics*
Dr. Leona Aiken
Arizona State University
- Winter 2002 *Multiple Regression*
Dr. Leona Aiken
Arizona State University
- Fall 2001 *Analysis of Variance*
Dr. Sanford Braver
Arizona State University

PROFESSIONAL AFFILIATIONS

- 2002-present Society for Personality and Social Psychology (SPSP)
- 2004-2009 Association for Psychological Science (APS)
- 2002-2008 American Psychological Association (APA)
- 2006 International Social Cognition Network (ISCON)
- 2006 International Society for Self and Identity (ISSI)
- 2007-2008 Human Behavior and Evolution Society (HBES)

PROFESSIONAL SERVICE

- 2006-2007 *PhD Representative*
Social Psychology Area Committee
Department of Psychology, University of Western Ontario
- 2005-2006 *Member*
Technology and Social Research Committee
Department of Psychology, University of Western Ontario
- 2005-2006 *Member*
Committee for the Advancement of Statistical Training
Department of Psychology, University of Western Ontario

PROFESSIONAL SERVICE

- Summer 2005 *Psychology Representative*
 Society of Graduate Students
 University of Western Ontario
- 2004-2005 *Treasurer*
 Psychology Graduate Students Association
 University of Western Ontario

EDITORIAL SERVICE

Personal Relationships Ad Hoc Reviewer

REFERENCES

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London, Ontario, Canada N6A 5C2

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